

NAVAL POSTGRADUATE SCHOOL

Monterey, California



19980724 064

THESIS

**OUT OF THE DRAGON'S MUSEUM:
MOTIVATIONS FOR PLA EQUIPMENT
MODERNIZATION**

by

Andrew L. Caldera

June 1998

Thesis Co-Advisors:

James J. Wirtz
Mary P. Callahan

Approved for public release; distribution is unlimited.

DTIC QUALITY INSPECTED 1

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE June 1998	3. REPORT TYPE AND DATES COVERED Master's Thesis		
4. TITLE AND SUBTITLE OUT OF THE DRAGON'S MUSEUM: MOTIVATIONS FOR PLA EQUIPMENT MODERNIZATION		5. FUNDING NUMBERS		
6. AUTHOR(S) Andrew L. Caldera				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.		12b. DISTRIBUTION CODE		
<p>13. ABSTRACT (<i>maximum 200 words</i>)</p> <p>This thesis explains the PLA's equipment modernization program by identifying Beijing's primary threat perception and how that affects Chinese modernization choices. Competing motivations for the PRC's military modernization will be evaluated in the context of three highly publicized recent weapons purchases: Su-27 FLANKERs, KILO SS's and SOVREMENNY DDG's.</p> <p>The PLA's equipment modernization program is motivated by concerns over sovereignty and territorial integrity. This thesis concludes that China's equipment upgrade program is primarily the result of the PRC leadership's perception that the United States Navy is China's most likely adversary. Future weapon acquisition policies such as foreign acquisition of advanced platforms, indigenous production of modern weapons, emphasis on older generation equipment, or a combination approach will be evaluated in the context of present trends.</p> <p>The PLA's modernization program is intended to support national strategic defense priorities by purchasing advanced weapons to provide a near-term capability while concurrently attempting to remedy shortcomings in the PRC's military-industrial infrastructure. Understanding the PLA's actions as a response to the regime's perception of the U.S. Navy as a threat highlights both the great importance that China's leaders place on sovereignty issues and the significant challenges facing their military modernization program.</p>				
14. SUBJECT TERMS: China, PRC, People's Liberation Army, PLA, PLAAF, PLAN, Military Modernization, KILO, FLANKER, SOVREMENNY, Military-Industrial Complex, Strategic Culture.		15. NUMBER OF PAGES 100		16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

Approved for public release; distribution is unlimited.

**OUT OF THE DRAGON'S MUSEUM:
MOTIVATIONS FOR PLA EQUIPMENT MODERNIZATION**

Andrew L. Caldera

Lieutenant Commander, United States Navy
B.S., United States Naval Academy, 1988

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL

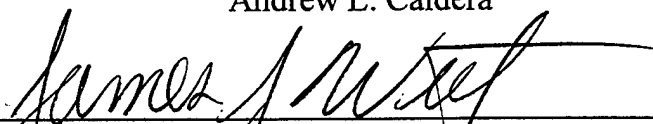
June 1998

Author:

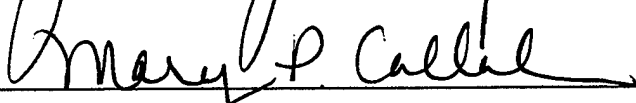


Andrew L. Caldera

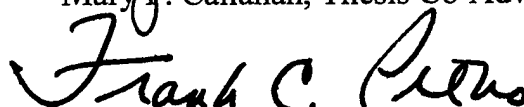
Approved by:



James J. Wirtz, Thesis Co-Advisor



Mary P. Callahan, Thesis Co-Advisor



Frank C. Petho, Chairman

Department of National Security Affairs

ABSTRACT

This thesis explains the PLA's equipment modernization program by identifying Beijing's primary threat perception and how that affects Chinese modernization choices. Competing motivations for the PRC's military modernization will be evaluated in the context of three highly publicized recent weapons purchases: Su-27 FLANKERs, KILO SS's and SOVREMENNY DDG's.

The PLA's equipment modernization program is motivated by concerns over sovereignty and territorial integrity. This thesis concludes that China's equipment upgrade program is primarily the result of the PRC leadership's perception that the United States Navy is China's most likely adversary. Future weapon acquisition policies such as foreign acquisition of advanced platforms, indigenous production of modern weapons, emphasis on older generation equipment, or a combination approach will be evaluated in the context of present trends.

The PLA's modernization program is intended to support national strategic defense priorities by purchasing advanced weapons to provide a near-term capability while concurrently attempting to remedy shortcomings in the PRC's military-industrial infrastructure. Understanding the PLA's actions as a response to the regime's perception of the U.S. Navy as a threat highlights both the great importance that China's leaders place on sovereignty issues and the significant challenges facing their military modernization program.

TABLE OF CONTENTS

I. INTRODUCTION	1
A. RESEARCH QUESTION AND HYPOTHESIS	4
B. SCOPE	5
C. RELEVANCE	6
D. METHODOLOGY	7
E. ORGANIZATION	7
II. COMPETING THEORIES ABOUT PLA EQUIPMENT MODERNIZATION	
.....	11
A. ACHIEVEMENT OF GREAT POWER STATUS	12
B. CCP POLITICAL LEGITIMACY AND SELF-PRESERVATION	13
C. EXPANDING MILITARY DUE TO EXPANDING ECONOMIC	
INTERESTS	15
D. MODERNIZED MILITARY-INDUSTRIAL INFRASTRUCTURE ...	17
E. SOVEREIGNTY ISSUES	19
1. Taiwan	20
2. The U.S. Factor	22
F. CONCLUSION	24

III. THE PRC'S EVOLVING STRATEGIC CULTURE	27
A. MAO AND "PEOPLE'S WAR"	27
B. DENG, THE "FOUR MODERNIZATIONS" AND DEFENSE REFORM	28
C. FAILURE IN VIETNAM	29
D. A NATIONAL MILITARY STRATEGY REDEFINED	30
E. THE GULF WAR	34
F. 1996 TAIWAN CRISIS	35
G. CONCLUSION	37
IV. HISTORICAL LEGACIES OF CHINESE ARMS PROCUREMENT	39
A. FOREIGN ACQUISITION AS A MEANS TO AN END	40
B. SOME "COSTS" OF EQUIPMENT MODERNIZATION	40
C. EARLY DEPENDENCE ON THE USSR	42
D. OF WESTERN SUPPLIERS AND A SINO-RUSSIAN WARMING ..	43
E. CONCLUSION	45
V. PRESENT PLA ACQUISITIONS	47
A. PROGRAM GOALS	47
B. STATUS OF THE PLAAF AND THE PLAN	48
C. SU-27 FLANKERS: BETTING ON THE FUTURE	50
D. KILOS: STEALTH FOR POWER PROJECTION	53

EXECUTIVE SUMMARY

While China watchers and U.S. government officials debate the validity of various aspects of the "China threat theory," the People's Liberation Army (PLA) is engaged in an extensive military modernization program. The China threat theory views China's impressive economic growth and increasing military capabilities as an Asian and perhaps an American security threat. The PLA's program has been referred to as a technological great leap forward, or, alternatively, a long march to modernization. The People's Republic of China's (PRC) ruling party is aware of the qualitative gap between Chinese military equipment and that of the West. Some China scholars have suggested that the military capability gap which existed between the PRC and other "relevant countries" in the aftermath of the Cold War may widen in the future. This thesis argues that Chinese leaders' evolving threat perception, in conjunction with strategic and doctrinal changes and the obsolescence of much of the PLA's military equipment, has increased the demand for weapon modernization.

This thesis explores the PLA's equipment modernization program by identifying Beijing's primary threat perception and how that affects the various modernization choices available to the Chinese leadership. Competing motivations for the PRC's military modernization are evaluated in the context of three highly publicized recent weapons purchases: Su-27 FLANKERS, KILO SS's, and SOVREMENNY DDGs. From this analysis, the thesis derives future Chinese weapon acquisition policies, such as foreign acquisition of advanced platforms, indigenous production of modern weapons or emphasis on older generation equipment.

This thesis is divided into six chapters. The introductory chapter provides an overview of my research question, its relevance, and how I analyze the current PLA equipment modernization program in the context of China's evolving strategic culture and its legacy of a weak military-industrial infrastructure.

Chapter II describes some competing theories on PRC motivations for military

E.	SOVREMENNYs: A "BIG STICK" FOR THE PLAN	54
F.	CONCLUSION	55
VI. CONCLUSION		59
A.	MOTIVATIONS EXPOSED	59
B.	FUTURE OPTIONS FOR EQUIPMENT MODERNIZATION	61
1.	The Foreign Option	61
2.	The Indigenous Production Approach	62
3.	"Enhanced" Self-Sufficiency	63
4.	Mix To Fit	63
5.	In The End	64
ENDNOTES		67
BIBLIOGRAPHY.....		73
INITIAL DISTRIBUTION LIST.....		79

equipment modernization. By considering various political, economic and strategic motivations, hypothetical military modernization programs are suggested for each modernization objective. While different motivations call for similar equipment procurement approaches, there are some significant differences that appear. Programs designed for further attainment of great power status or to reinforce the CCP's political legitimacy and self-preservation needs would likely have a very clear PLA equipment (versus PLAN and PLAAF) component. PLAN and PLAAF weapon advancement and procurement are primary components of the majority of economic and strategic motivations. A number of economic stimuli tend to emphasize the defensive end of the intentions spectrum, while development of a robust and modern military-industrial complex would put priority on technology and production technique transfer to ultimately bolster indigenous capabilities. Strategic motivations focus on the clearest threats to PRC sovereignty and security concerns, and move toward greater emphasis on offensive and defensive power-projection capabilities. In evaluating Beijing's threat perception, possible U.S. Navy intervention in what the PRC considers territorial integrity issues is the primary motivation for the specific equipment being acquired as part of the present PLA modernization program.

Chapter III analyzes the change in the PRC's military strategy from the founding of Communist China in 1949 to the present. The shift in focus from a "People's War," defensive mentality to a southern-looking, maritime "Active Offshore Defense" posture is evaluated. As part of this redirection toward the littoral region, the PLA has placed primary importance on improving the power-projection capabilities of the PLAN and the PLAAF. Additionally, three conflicts or incidents which took place within the last two decades – the 1979 Vietnam incursion, the 1991 Gulf War and the 1996 Taiwan Strait missile exercise – are evaluated to determine what impact they have had on PLA strategic thinking and modernization goals. Lessons from the Vietnam incursion and especially Desert Storm reinforced the Chinese belief in the importance of high-technology weapons, while the demonstrated American willingness to become involved in what the PRC leadership believes to be a domestic issue led the PLA to consider how to prevent U.S. Navy interference in

China-Taiwan affairs using an offshore defensive doctrine.

Chapter IV investigates the historical legacies of Chinese arms development and acquisitions. The advantages and disadvantages of PRC indigenous arms development versus foreign arms procurement have changed over time in the context of China's dependence on the Soviet Union during the 1950s, the turmoil of the Great Leap Forward and the Cultural Revolution in the 1960s and early 1970s, interaction with the West during the mid-1970s and 1980s and the post Cold War Sino-Russian relationship. Recent warming Sino-Russian relations have allowed the PRC to purchase Russia's most advanced weapons while receiving significant technology transfer offsets. The goal of the PRC's military equipment acquisition program is to provide the PLA with advanced foreign systems in the short-term to deal with potential high-technology threats, like those posed by U.S. Navy CVBGs, while utilizing associated technology transfers to improve its indigenous capabilities for the long-term.

Chapter V provides a close look at the three most recent Chinese arms purchases from Russia: Su-27 FLANKER air superiority fighters, KILO-class submarines and SOVREMENNY-class destroyers. PLA acquisition of these platforms fulfill some PLAAF and PLAN near-term requirements resulting from the PRC's national defense strategy and specifically the leadership's perception of the U.S. Navy CVBG "threat." While these systems could be utilized in different scenarios in the South China Sea and would be employed in any direct conflict with Taiwan, they provide much greater deterrent value when the PRC's leadership considers the "American element" of a Beijing-Taipei confrontation. The combined capabilities of these weapons are not meant to guarantee a victory over the Seventh Fleet in a war at sea, but they will give the U.S. leadership reason for increased caution with respect to possible American intervention.

Chapter VI concludes by reiterating how Beijing arrived at the primary motivation for the PRC's military equipment modernization program, and predicting what procurement approach China's leaders may utilize in the future. Based on the PLA's perception of the U.S. Navy as the greatest threat in the Taiwan issue, as long as the United States maintains

a presence in the Pacific, Beijing will attempt to possess a conventional deterrence response to CVBGs should America engage in additional "gunboat diplomacy" as it did in March 1996. To increase the PLA's capabilities in the future, the PRC will continue pursuing an equipment modernization program which includes foreign procurement for immediate, short-term capability and utilization of associated technology transfer to improve the indigenous military-industrial infrastructure while moving toward the long-term goal of armament self-sufficiency.

LIST OF ACRONYMS

ASW	Anti-Submarine Warfare
AWACS	Airborne Warning and Control System
CCP	Chinese Communist Party
CMC	Central Military Commission
CVBG	Carrier Battle Group
DDG	Guided Missile Destroyer
EEZ	Economic Exclusion Zone
FBIS	Foreign Broadcast Information Service
MRBM	Medium Range Ballistic Missile
PLA	People's Liberation Army (includes all services)
PLAAF	People's Liberation Army Air Force
PLAN	People's Liberation Army Navy
PRC	People's Republic of China
R&D	Research and Development
SAM	Surface-to-Air Missile
SRBM	Short Range Ballistic Missile
SS	Attack Submarine
SSM	Surface-to-Surface Missile

ACKNOWLEDGMENTS

I am indebted to Dr. Claude Buss for nurturing my interest in China through his magnificent teaching and reflections on the many decades he has spent studying the country from both inside and out. My appreciation of many subtleties of Chinese history and culture are due to his enthusiasm.

I would like to thank both of my thesis advisors for the time, effort and support they provided throughout the writing and editing of this thesis. Without the energy, guidance and professional insight offered by Dr. Mary Callahan and Dr. James Wirtz this final product would not have been possible. Dr. Callahan is following in the steps of Dr. Buss in both her effective teaching style and attention to detail. Her interest in my topic and mastery of grammar and logic helped me craft a much smoother product. Dr. Wirtz was outstanding in identifying my excessive verbiage and contributed to a much tighter final presentation. Notwithstanding the efforts of my advisors, any errors or problems that remain in the analysis and conclusions of this thesis are solely my responsibility.

Finally, I thank my wonderful family for all their support. My wife, Amy, provided endless encouragement when the daunting work of graduate school had me down. My very special son, Austin, brightens every day with his smiles, no matter what the occasion. My parents, Don and Yvette Caldera, gave me the wings with which to fly. Mom has always been there and Dad is my hero.

I. INTRODUCTION

While China watchers and U.S. government officials debate the validity of various aspects of the "China threat theory," the People's Liberation Army (PLA) is engaged in an extensive military modernization program. The China threat theory views China's impressive economic growth and increasing military capabilities as an Asian and perhaps an American security threat. The PLA's program has been referred to as a technological great leap forward, or, alternatively, a long march to modernization. The People's Republic of China's (PRC) ruling party is aware of the qualitative gap between Chinese military equipment and that of the West. Some China scholars have suggested that the military capability gap which existed between the PRC and other "relevant countries" in the aftermath of the Cold War may widen in the future.¹ David Shambaugh, for instance, argues that China's modernization program will "be a great boost to the PLA, and will substantially close the technological gap compared with other Asian militaries, but the gap compared with the state-of-the-art is actually widening."² This thesis argues that Chinese leaders' evolving threat perception, in conjunction with strategic and doctrinal changes and the obsolescence of much of the PLA's military equipment, has increased the military's demand for weapon modernization.

China's strategic culture has evolved over the past fifty years. During the 1950s and the early 1960s, Mao and the Chinese Communist Party (CCP) leaders struggled with maintaining the population's ideological passion, while at the same time addressing the need for technocrats and professionals capable of introducing technology and modern industrial

methods to the country. This challenge became known as the "red-versus-expert problem." According to Kenneth Lieberthal, during the 1962-65 period, "the skillful handling of politics and high technology in the army seemed to Mao to resolve what the CCP termed the 'red-versus-expert' problem – that is, the problem of combining both political commitment and technical expertise. The PLA seemed to combine technical expertise, organizational discipline, and ideological fervor."³ In subsequent years, the military continued to suffer its own red-versus-expert problem because many PLA leaders supported more professionalism and less ideology in the services. By the late 1980s, those advocating professionalism and technological improvement of the PLA had the upper hand. Following the 1991 Gulf War, those military leaders favoring expertise won the PLA's "red-versus-expert debate."

As the Chinese national strategic culture evolved, so did the military culture of the PLA. Elizabeth Kier writes that "the military's organizational culture works within the constraints set by civilians; the military's culture intervenes between civilian choices and military doctrine."⁴ In the case of the PLA, CCP leaders in Beijing dictate the national defense policies, but the military is responsible for configuring itself, both equipment-wise and doctrinally, to support those policies. While the military culture adjusted to the emphasis on professionalism and high-technology weaponry, a mid-1985 change in the national military strategy resulted in a new maritime, littoral threat focus. To best address the new threats to national security, the PLA had to choose between pursuing a short-term or a long-term equipment procurement program. The short-term objectives were meant to be addressed by the mid 1990s, while the long-term goals focused on objectives for early in

the next century.

For China, force modernization is a lofty goal that has political, economic and technical consequences. In the political arena, national military capabilities figure prominently in China's plans to attain great-power status and to reassert leadership in Asia during the coming decades. As the Chinese economy continues to make amazing strides forward, Beijing is aware that the PLA is not a first-class military. From a technology standpoint, the majority of the PRC's indigenously-produced weapons are based on pre-1970s technology and manufacturing techniques. As Bates Gill and Taeho Kim point out, "for more than 150 years Chinese leaders have recognized the need for military modernization through the procurement and integration of foreign weapon systems."⁵ China has had little success, however, in translating foreign purchases into sustained indigenous production of sophisticated arms.

China must choose between purchasing advanced foreign weaponry or indigenous arms development and production. The PRC has attempted both approaches with varying degrees of success. In the past, when China's indigenous technology was insufficient and defense needs pressing, the PLA turned to foreign suppliers.⁶ The current PLA modernization program is no different: significant advanced technology and complete systems are now acquired from Russia and Israel. The Chinese hope the advanced technology transfer will allow the PLA's military-industrial complex to make a qualitative leap forward. Chas Freeman, a former assistant Secretary of Defense, said, "China's armed forces are trying to leap-frog their way to parity with the United States. One of the

advantages of coming in late is that you can skip the evolutionary stage."⁷ Gill notes that arms transfers to China are undergoing a fundamental change: "unlike earlier Soviet and current Russian sales, Israel appears to be more willing to provide technology rather than off-the-shelf weaponry."⁸ Technology transfer is crucial to the PRC's long-range goals associated with development of a first-rate, advanced military-industrial infrastructure.

This thesis explores the PLA's equipment modernization program by identifying Beijing's primary threat perception and how that affects the various modernization choices available to the Chinese leadership. Competing motivations for the PRC's military modernization will be evaluated in the context of three highly publicized recent weapons purchases to identify the primary driving force behind the program. Future Chinese weapon acquisition policies, such as foreign acquisition of advanced platforms, indigenous production of modern weapons and emphasis on older generation equipment will be evaluated.

A. RESEARCH QUESTION AND HYPOTHESIS

What is the primary motivation for the present PLA equipment modernization, how is this program shaped by that motivation and what are the likely implications for future PRC military modernization? Based on the regime's motivation, different developmental strategies or approaches are available to Beijing which address specific challenges associated with Chinese advanced weapon procurement.

The PLA equipment modernization program is motivated by national concerns over sovereignty and territorial integrity. More specifically, China's equipment upgrade program

is primarily the result of the PRC leadership's perception that the United States Navy is China's most likely adversary.

The PRC's perception of the U.S. Navy as the primary threat to its security is related to the "American element" of the ongoing Taiwan situation. As Paul Godwin writes, "put simply, the PLA cannot plan military operations designed to subdue Taiwan without including the contingency of United States involvement."⁹ Although all U.S. military branches possess advanced capabilities, the primary force that would be utilized for intervention in the Taiwan Strait is the U.S. Navy, specifically carrier battle groups (CVBGs).

Not only does the sophistication level of U.S. weaponry pose a problem for the PLA, but the inability of the PRC's military-industrial complex to provide cutting-edge armaments to the services further exacerbates the dilemma from the PRC perspective. In the present modernization program, China has made major system purchases from Russia to achieve a short-term high-tech capability as a stop-gap measure while insisting on associated technology transfers for long-term defense infrastructure development.

B. SCOPE

This thesis explores the improvement in power-projection capabilities of the People's Liberation Army Navy (PLAN) and the People's Liberation Army Air Force (PLAAF) in light of the recent purchases of KIL0-class submarines, SOVREMENNY-class destroyers and Su-27 fighters. The discussion of the change in PLA strategic considerations, in chapter III, will highlight why the PRC now places primary strategic importance on the southern

maritime region as opposed to land neighbors on China's periphery.

Although indigenous advances in the MRBM, SRBM and nuclear deterrent force capabilities are noteworthy, they are not power-projection weapons included for consideration with the modern conventional arms recently purchased by Beijing. The most probable use of MRBMs is against the island of Taiwan in the event of a declaration of independence by Taipei. The PRC's missile forces are not the primary cause for concern among China's neighbors. Rather, China's neighbors worry most about the developing PLA maritime mission, defined at the October 1992 14th Party Congress by then CCP General Secretary Jiang Zemin, to "speed up national reunification, defend territorial integrity, and ensure maritime rights and interests,"¹⁰ and the PRC's acquisition of the power-projection platforms necessary to support that mission.

C. RELEVANCE

The present PLA modernization program is both methodical and calculated. Its goal is to support national defense priorities through the purchase of advanced weapons to provide a near-term capability while concurrently attempting to remedy historical shortcomings in the PRC's military-industrial infrastructure. Understanding the PLA's actions as a response to the regime's perception of the U.S. Navy highlights both the importance that China's leaders place on sovereignty and the challenges facing their military modernization program. Armed with this knowledge, national decision makers will be better equipped to decipher what is accurate when confronted by the myriad of opinions about the ongoing PLA modernization.

D. METHODOLOGY

The thesis utilizes a case study technique with a longitudinal historical approach to explore the issues at hand. Changes in the strategic culture and priorities in the PLA defense doctrines, from "People's War" to "People's War under modern conditions" to the present focus on "Limited, Local War under high-tech conditions" will be described as the product of lessons learned from the 1979 Vietnam incursion, the 1991 Gulf War and the 1996 Taiwan Strait missile firings. The PRC's recent historical legacies with respect to arms procurement and production will be evaluated to identify a baseline from which the current program is compared/contrasted. Next, three high visibility PRC arms purchases will be evaluated with respect to the role they play in modernization of the PLA, and how they are a direct response to the PRC's threat perception. Finally, future options for the continuing modernization program will be evaluated based on current trends and capabilities.

This thesis supplies a synthesis of information on PLA modernization from numerous sources. A large percentage of my references were acquired from Lexis-Nexis and FBIS articles, including newspaper articles, translations and commentaries of official Chinese documents and speeches given by Chinese leaders. Magazines and journals such as *Jane's Defence Weekly*, *Far Eastern Economic Review*, *China Quarterly*, *Current History* and *Jane's Intelligence Review* were utilized. Additionally, a number of RAND Corporation reports and National Defense University (NDU) products were reviewed.

E. ORGANIZATION

This thesis is divided into six chapters. Chapter II describes some competing theories

on PRC motivations for military equipment modernization. Through consideration of various political, economic and strategic motivations, appropriate modernization criteria will be established for each option.

Chapter III analyzes the change in the PRC's military strategy from the founding of Communist China in 1949 to the present. The shift in focus from a "People's War," defensive mentality to a southern-looking, maritime "Active Offshore Defense," posture will be addressed. Additionally, three conflicts or incidents which took place within the last two decades – the 1979 Vietnam incursion, the 1991 Gulf War and the 1996 Taiwan Strait missile exercise – will be evaluated to see what impact they have had on the evolution of PLA strategic thinking and modernization goals.

Chapter IV investigates the historical legacies of Chinese arms development and acquisitions. The advantages and disadvantages of PRC indigenous arms development versus foreign arms procurement have changed over time in the context of China's dependence on the Soviet Union during the 1950s, the turmoil of the Great Leap Forward and the Cultural Revolution in the 1960s and early 1970s, interaction with the West during the mid-1970s and 1980s and the post Cold War Sino-Russian relationship.

Chapter V provides a close look at the three most recent Chinese arms purchases from Russia: Su-27 FLANKER air superiority fighters, KILO-class submarines and SOVREMENNY-class destroyers. The implications of integrating these advanced weapons into the PLAN and PLAAF will be discussed, as well as secondary considerations such as the technology transfer associated with the Su-27 agreement. Platform capabilities and

possible utilization will be assessed in terms of how well they support the competing theories of PRC motivations for modernization.

Chapter VI concludes by reiterating how Beijing arrived at the primary motivation for the PRC's military equipment modernization program, and the effect that program may have in the future. Additionally, future options for PLA equipment modernization will be discussed. Different approaches such as exclusively indigenous production, foreign procurement and some variations of the two approaches will be considered. Predictions about future procurement trends will be based on anticipated PRC strategic priorities and the PLA's desire for a robust military-industrial complex.

II. COMPETING THEORIES ABOUT PLA EQUIPMENT MODERNIZATION

This chapter explores competing theories about PRC motivations for military equipment modernization and identifies the types of weapons that would fit each motivation. The alternative hypotheses that I will present for PLA modernization fall under the general headings of political, economic and strategic considerations. Two stimuli for force improvement under the political heading are China's desire to achieve great power status and a need to maintain internal order in the face of the CCP's political legitimacy crisis. Four motivations for military equipment improvements will be discussed with respect to the PRC's expanding economy: the increasing importance of maritime trade and traffic, the proximity of the PRC's major industries to the coast, energy requirements and sources, and the effect of UN legislation on economic zones. The need for a modernized defense research and development (R&D) and industrial base will be discussed as an economic motivation. The final category of strategic considerations emphasizes sovereignty and territorial integrity issues, specifically with respect to Taiwan and the South China Sea, and the implications of the U.S. military presence in the region. Although I will characterize the components of the competing theories as unique political, economic and strategic considerations, all contribute to Beijing's desire to modernize the PLA's equipment. This thesis argues that one specific strategic consideration, the perceived threat posed by the U.S. Navy, is the most relevant motivation for the present PLA equipment modernization program.

A. ACHIEVEMENT OF GREAT POWER STATUS

Military capabilities figure prominently in China's plans to attain great-power status and to reassert leadership in the Asia Pacific region. John Downing suggests, "in light of aspirations to become a regional superpower, the PRC undoubtedly believes that it must achieve regional military supremacy in order to assert authority over neighboring states. This it cannot do at present. The long-standing but unfulfilled ambition to resubordinate Taiwan is a classic example."¹¹ While China's first priority is economic development and not military modernization, Beijing's rhetoric that "the ongoing modernization drive of the PLA is targeted solely on upgrading obsolete equipment for more effective national defense"¹² fails to mollify her Asian neighbors.

The Chinese consider military power to be the most important component of "comprehensive national strength," which is viewed as indispensable in China's attempt to regain its status as a leading world power and to defend against any threats, actual or imagined, to its territorial sovereignty and political integrity.¹³ The intense national feeling about the need for a strong military reflects the shared memory of the century of humiliation which lasted from the first Opium War to the end of World War II. The current CCP leadership in Beijing appears to desire a credible military to complement the economic power that their nation is developing. From a strategic standpoint, the idea that military power produces both deterrence and status reflects and affects internal debates about why China needs more and better high-tech systems.¹⁴ Great countries require a military capable of supporting their objectives. Although the PLA has one important category of weapons

to support its ascent to the status of a great power – its nuclear deterrent – obsolete equipment still comprises a majority of its force structure. In the increasingly high-technology arena of modern weapons, the PLA's conventional equipment inventory lacks sophistication.

If the PRC were modernizing its equipment according to what would look most fitting for an emerging great state, it would probably follow a pattern similar to the approach utilized by many of the ASEAN nations in the early 1990s: procurement of a small number of advanced weapons across a wide range of capabilities to give the appearance of an advanced military. The PLA, PLAAF and PLAN would all want to have showcase troops armed with the best equipment to appear truly modernized to the rest of the world. Recent high priority acquisitions, however, greatly favor the PLAAF and the PLAN, suggesting that the present program is not primarily motivated by need to bolster the military to achieve great power status.

B. CCP POLITICAL LEGITIMACY AND SELF-PRESERVATION

Another possible political stimulus for PLA equipment modernization has to do with the leadership's need to maintain internal control. An important aspect of the Chinese Communist Party's support base has always been provided by the PLA's allegiance to the party. Chong-Pin Lin argued that "Beijing's leaders reversed earlier defense budget reductions, apparently as a reward for the PLA's contribution to restoring order in Tiananmen square."¹⁵ In their article, "Red Herring Hegemon: China in the South China Sea," *Foreign Affairs* associate editor William Dobson and M. Taylor Fravel take this idea

one step further by indicating a specific area of party support provided to the PLA in the aftermath of Tiananmen:

Many of the current core leaders, especially Prime Minister Li Peng, are indebted to the PLA for its role in suppressing the Tiananmen demonstrators in 1989 and recognize that their survival depends on the military's loyalty. Cast as a matter of the national interest, PLAN independence in the South China Sea has been given in exchange for the military's domestic support.¹⁶

The opportunity to secure continued military support of the party can be viewed as a significant motivator to the CCP leadership.

Dobson and Fravel are even more succinct in their connection of Beijing's crisis of legitimacy to China's approach to issues in the South China Sea:

The acceptance of Deng's market reforms has eroded the salience of Communist ideology, leaving the Chinese Communist Party bereft of a justification for its continued authoritarian rule.... The broad expanse of water in the South China Sea suggests sovereignty can be asserted without violent conflict, as almost any action, such as placing a territorial marker or drilling for oil, will improve the leadership's credibility.¹⁷

The linkage between increased CCP support for the PLA and the belief that sovereignty enforcement will enhance Beijing's credibility provides a dual motivation for political support of arms modernization. Defense of territorial integrity will expand the responsibility of the PLA, specifically the PLAN and the PLAAF in the area of the South China Sea and the littoral areas. Additionally, party support for equipment modernization will address two important political issues: giving the PLAN/PLAAF advanced weapons to upgrade their arsenals; and showing the population the leadership's intent to defend China's sovereignty issues in the maritime area.

An equipment modernization program designed to enhance political legitimacy

would involve increasing maritime surveillance capabilities for the PLAN and PLAAF and provide the PLA with more modern weaponry to deal with internal disorder. For improvement of navy and air force surveillance of the littoral and South China Sea, one would expect to see procurement of mid-air refueling capabilities and airborne command and control platforms similar to U.S. AWACS. Naval procurement would probably lean toward ships with greater underway duration for longer on-station time in potentially contested areas in the South China Sea. Army improvements might include procurement of newer armor systems to deal with potential riots or rebellions in the northwest region of the country. A program to support this political agenda would emphasize upgrading the conventional forces of the services to show renewed party acknowledgment of the military's needs, while providing the citizens with examples of how sovereignty will be enforced during regional disputes. While the motivation of defending territorial areas is important, and will be addressed in both the economic and strategic options, procurement of weaponry to maintain internal order has not proven to be a significant priority thus far in the modernization process. The CCP's search for political legitimacy is probably not the primary motivation for the Chinese military modernization.

C. EXPANDING MILITARY DUE TO EXPANDING ECONOMIC INTERESTS

Various purely economic security needs can be viewed as driving the PLA's modernization effort. China's growing economy has become more dependent on the merchant shipping fleets of the world which provide the PRC with energy and consumer imports and the major venue for national exports. For example, in 1993, more than 15

percent of the world's cross-border trade passed through the sea-lanes near the Spratly Islands.¹⁸ China's component of maritime trade through the Asia-Pacific sea-lanes is significant. The value of Chinese trade passing through the Strait of Malacca is estimated to be in excess of US\$100 billion, and its trade and petroleum demand is growing at roughly 10 percent a year.¹⁹ In conjunction with protection of maritime commerce, the proximity to the coast of much of China's industrial capability might be an economic motivation for more advanced defensive weaponry. Only through advanced technological power-projection capabilities will the PLA be able to defend those national interests in the littoral and open ocean maritime areas.

Much of China's economic expansion is driven by energy-intensive industry. One reason for the PRC's emphasis in the South China Sea can be attributed to the resource-rich Spratly and Paracel island groups. Those areas have potential oil reserves that are of vital interest to the Chinese economy as it continues to grow and industrialize. The PRC's economic expansion will continue to require greater oil imports, making any indigenous oil reserves extremely important. Many of the PRC's regional neighbors, however, share China's interest in the archipelagoes, and armed conflicts have taken place between the PLAN and both the Vietnamese and Philippine navies during the last decade. Although all nations involved would rather see disputes over the area solved diplomatically, the potential for conflict supports PLA acquisition of advanced weaponry.²⁰

Another economic security issue that could justify PLA equipment modernization in the maritime arena includes the impact of expanded economic exclusion zones (EEZs),

which exacerbated many historical territorial disputes due to overlapping EEZs. EEZs in maritime areas delineate national economic jurisdiction. One aspect of that jurisdiction involves enforcement of fishing regulations. Food resources will increase in importance as regional populations continue to grow at exponential rates. Although EEZs are often considered first as economic issues, they also play a role in sovereignty and territorial disputes.

Although economic motivations are quite diverse, an equipment modernization program designed to support this set of economic concerns would most likely focus on enhancing maritime defensive capabilities. It would not call for significant PLA acquisitions, rather it would advocate an increased littoral and regional surveillance capability for the PLAN and PLAAF. This requirement might manifest itself through program development of longer endurance blue-water patrol craft with advanced weaponry and patrol aircraft with greater range and loiter times. The current acquisition program does not appear to be focused on increased littoral surveillance capabilities, which indicates that the PLA equipment upgrade is not primarily driven by the PRC's expanding economic interests.

D. MODERNIZED MILITARY-INDUSTRIAL INFRASTRUCTURE

Development of an advanced military-industrial base has been a Chinese goal since the end of the Cultural Revolution. According to Godwin, "Deng Xiaoping's long-term objective for the military reforms he introduced in 1979 was to build a self-sustaining defense establishment so that China could not be intimidated by any military power, and

Beijing's foreign policies would not be constrained by military weakness."²¹ A modern defense establishment would not only provide indigenous weapons development capabilities for the PLA, but would also support the national economy through military exports.

PRC arms have often been purchased by developing nations due to their lower cost and sophistication in comparison to systems from Russia or the West. This emphasis on production of older generation weapons never encouraged development of advanced R&D capabilities and cutting-edge industrial techniques, as would have been the case if China were directly competing with the other industrialized nations in this market. When the connection is made between advances in the military sector and civilian commercial enterprises, the cost of this technological backwardness is more significant to the overall economic picture. Beijing has acknowledged the importance of national industries utilizing advanced technologies. According to Kim, "A country's success in global competition is also said to depend on the development of its high-tech industries. If China is to become a world power, it must attend to these industries, as it once did to the development of nuclear weapons and satellite programs."²² China has to be technologically competitive with the military and industrial powers if it is to beat them at their own game.²³ Godwin takes the point one step further, citing the leadership's acknowledgment that until China's defense industries place advanced weapons and equipment into series production, they cannot be considered an effective defense industrial base for the military. He believes this position demonstrates Beijing's goal of qualitative improvement of the PRC's military-industrial infrastructure.²⁴ One possible motivation for PLA equipment modernization may be the

desire for technology transfer, first for use in the military field, but subsequently for application to the civilian sector.

A program of weapon modernization responding to this economic motivation would place a premium on technology transfer in foreign purchases. It could be expected to utilize purchases from many countries for all services to acquire a wide range of advanced technology and production techniques. An enhanced military-industrial complex would result in eventual export of Chinese copies of weapons procured from foreign sources. While the Su-27 deal does involve technology and production technique transfer from Russia to China, neither the KILO or SOVREMENNY purchases do, which decreases the likelihood of purely economic motivations behind the ongoing equipment modernization program.

E. SOVEREIGNTY ISSUES

Sovereignty and security interests are often paramount motivations for a country's military modernization. According to Dobson and Fravel, "Sovereignty issues such as the South China Sea occupy a central position in the Chinese national consciousness. Indeed the importance China has attributed to the Spratly Islands stems from the desire to prevent humiliations like those of the past rather than from a hegemonic grand plan."²⁵ Chinese concerns about territorial integrity can be understood from an historical perspective. China perceives itself as the superior "middle kingdom," but it also underwent a "hundred years of shame" due to foreign influence in its internal affairs.²⁶ In recent years, the PLA has capitalized on the national sensitivity to sovereignty issues. In March 1992, the National People's Congress in Beijing passed a territorial law affirming China's claim to the Spratly

Islands and authorizing the naval wing of the PLAN to use force to protect its sovereignty.²⁷ Once the military has established a legitimate mandate to perform a specific mission, it is reasonable for the appropriate service to request provision of the required weaponry. Indeed, the request for new equipment becomes even more compelling when the territorial integrity issue is combined with the greater national security agenda.

From a national security standpoint, the PLA is focusing on development of military forces more capable of asserting Chinese interests in East Asia and the resource-rich South China Sea.²⁸ As nation's security concerns become more and more intertwined with economic considerations, natural resources and the access to those resources will become increasingly important. An indication that the PRC has already recognized the importance of China's offshore regions and the large number of areas for potential conflict is that the air force and navy have priority in obtaining funds for weapons procurement because they are central to the PLA's goal of expanding its power-projection capabilities.²⁹ Those desired capabilities are not only meant to protect the energy sources and sea-lanes so important to the PRC's continued modernization, but also as one aspect of the "diplomatic" negotiations with Taipei.

1. Taiwan

While the two areas of greatest strategic importance to the PRC in the south are clearly Taiwan and the South China Sea, Taiwan represents a clear sovereignty issue, while parts of the South China Sea have mainly economic significance. One analyst concludes that of the two areas, "The present situation shows the Taiwan issue constitutes the principal

threat to China's national security."³⁰ Beijing has repeatedly asserted that Taiwan is part of the mainland, and a declaration of independence would draw a military response. At a December 1994 PLA strategy conference on Taiwan, Chi Haotian, Chief of the General Staff and a CMC member, declared "Right now, Taiwan independence is the arch-enemy of the Chinese nation. The plan to pursue policies of Taiwan independence, 'one China, one Taiwan,' and 'two Chinas' is equivalent to an open declaration of war."³¹ Chi went on to say that the mainland would use military means to resolve the issue if the Taiwanese government continued to move toward independence.

Taiwan is a PRC security issue that supports PLA modernization of its offensive military capability. The status of Taiwan with respect to the mainland is a contentious matter. While Beijing considers the "Taiwan Issue" to be an internal matter and reserves the right to respond to Taiwanese actions in any manner deemed appropriate by the leadership, Taiwan continues to seek support for full independence and international recognition. In this climate, the fact that Taiwan's military has been purchasing sophisticated ships and aircraft is potentially destabilizing. Among the most significant Taiwanese aircraft purchases are four Grumman E-2 HAWKEYE AWACS, 150 F-16s and 60 Mirage 2000s. These acquisitions are significant from the PLAAF's point of view because the fighters represent fourth generation technology while the HAWKEYEs provide an airborne command and control capability which the PLA presently lacks.

The type of equipment modernization program most fitting for the PLA's requirement to protect the territorial integrity and security interests of the PRC southern

littoral areas would supply advanced weaponry for use by the PLAN and the PLAAF. An increase in surveillance and on-station time for both patrol ships and aircraft would be expected. A security and sovereignty motivation, however, would also place a greater emphasis on the power-projection capabilities of the platforms procured. In the event of failed diplomacy, Beijing would desire the "big stick" to execute national policy. In the specific case of Taiwan, a PLAAF emphasis on airborne command and control systems and a qualitative improvement on the PLAAF fighter aircraft to deal with potential conflict between the opposing air forces would be expected. From the PLAN standpoint, ships equipped with better anti-air systems and an improvement in anti-submarine warfare (ASW) capabilities would be expected in order to deal with Taiwan's air and submarine forces. Present PLA equipment procurement is not emphasizing increased airborne command and control platforms, which would be essential for any conflict with Taipei, indicating that the island of Taiwan is not the primary motivation for the present upgrade program.

2. The U.S. Factor

When Beijing considers Taiwan, the centrality of the U.S. factor must loom large.³² While Beijing considers Taiwanese issues to be an internal concern of the PRC, the United States sees the situation differently. The U.S. policy of selling arms to Taiwan has been cause for concern to the mainland since 1972. The CCP leadership views the U.S. policy of selling weapons to Taiwan as tacit support of pro-Taiwan independence forces.³³ Additionally, the United States is under treaty obligations to support Taiwan militarily if it is attacked.³⁴ During Jiang Zemin's report to the Fifteenth National Congress, he talked

about Taiwan:

The growth of the splitting tendency on the Taiwan Island and the interference of certain foreign anti-China forces have stood in the way of peaceful reunification as big obstacles, which of course have met with determined opposition from the Chinese people including our compatriots in Taiwan....We shall not allow any forces whatsoever to change Taiwan's status as part of China in any way. We shall work for peaceful reunification, but we shall not undertake to renounce the use of force. This is not directed against our compatriots in Taiwan, but against the interference of foreign forces with China's reunification and against schemes to bring about the "independence of Taiwan."³⁵

Jiang implied that the United States was a foreign force interfering in the Taiwan problem.

In March 1996, U.S. Defense Secretary Perry ordered two U.S. Navy CVBGs into the Taiwan Strait in reaction to coercive PLA military activity, called "Exercise Strait 961," which included missile firings north and south of Taiwan intended to intimidate Taipei. The American show of force was perceived as a humiliation by the PRC leadership, furthering the perception of the U.S. Navy as the primary Chinese threat in the region.

From a threat perspective, the strength and presence of the U.S. military, especially the U.S. Navy, causes the PRC concern. Although China once saw U.S. forces as stabilizing, recent comments from Beijing have suggested that since the end of the Cold War, China no longer needs American forces in the region. This reflects the PRC's desire to reassert a leadership role in Asia. It is also an indicator that U.S. involvement in regional security issues is embarrassing to China due to America's advanced military hardware.

Devising an equipment modernization program to deal with the U.S. military, especially the U.S. Navy, is a problem for China. One would expect to see the PLA place an emphasis on power-projection capabilities designed to keep U.S. forces at a distance.

Procurement and development would be similar to that described for dealing with Taiwan, except the PLA would endeavor to take another step toward conducting any battle at the greatest distance from the mainland as possible. The PLAN also would be interested in greater submarine power-projection and defensive capabilities. Surface ship improvements would be similar to the Taiwan scenario, but greater surface strike missile range and lethality would be needed to deal with U.S. Navy CVBG assets. Improved PLAAF fighter aircraft with long range and effective anti-surface missiles could be supported by stealthy submarines operating in approaches to the area of conflict, most probably the Taiwan Strait. Based on the PRC's investment in clearly power-projection oriented platforms like Su-27 air superiority fighters, KIL0-class submarines and SOVREMENNY-class destroyers which were initially designed as anti-CVBG assets by the USSR, Beijing's desire to have a force capable of engaging the U.S. Navy at the greatest distance from the Taiwan Strait is the primary motivation for the equipment prioritization in the present PLA modernization.

F. CONCLUSION

Although the approaches call for similar equipment procurement strategies, there are some significant differences that appear. Programs designed for further attainment of great power status or to reinforce the CCP's political legitimacy and self-preservation needs would likely have a very clear PLA equipment (versus PLAN and PLAAF) component. PLAN and PLAAF weapon advancement and procurement are primary components of the majority of economic and strategic motivations. A number of economic stimuli tend to emphasize the defensive end of the intentions spectrum, while development of a robust and modern

military-industrial complex would put priority on technology and production technique transfer to ultimately bolster indigenous capabilities. Strategic motivations focus on the clearest threats to PRC sovereignty and security concerns, and move toward greater emphasis on offensive and defensive power-projection capabilities. In evaluating Beijing's threat perception, possible U.S. Navy intervention in what the PRC considers territorial integrity issues is the primary motivation for the specific equipment being acquired as part of the present PLA modernization program.

In subsequent chapters the evolution of the PLA's strategic culture and mission shift since 1949 and the history of the PRC's attempt to develop an advanced military-industrial complex will illustrate the challenges facing Beijing's military modernization program. In light of those legacies, the three most recent purchases from Russia will help explain why the U.S. Navy is the primary motivation for the ongoing PLA equipment modernization.

III. THE PRC'S EVOLVING STRATEGIC CULTURE

China's communist leaders have always believed that their country has been surrounded by real or potentially hostile forces.³⁶ Their overall strategy has reflected that concern. During the 1950s and most of the 1970s the PLA emphasized a strategy based on Mao's concept of "People's War," which was primarily directed at the threat posed by China's neighbors to the North and East. The late-1970s saw Deng Xiaoping rise to power, the beginning of defense reform, and the PRC's embarrassment in Vietnam. June 1985 provided a major strategy change for the PLA which, when viewed in conjunction with the subsequent warming with the Soviet Union and then Russia, was the beginning of a southern-looking, maritime strategy that continues today. Examination of the PLA's evolving strategic culture will highlight the important lessons learned by Beijing from the 1979 Vietnam incursion, the 1991 Gulf War and the PLA's 1996 missile firing north and south of Taiwan, and how those lessons-learned contributed to the military's equipment modernization priorities which focus on technologically advanced power-projection platforms.

A. MAO AND "PEOPLE'S WAR"

The PLA's official strategy and doctrine since its founding in 1927 has been referred to as People's War. People's War is a defensive military doctrine focused on defeating enemies possessing superior weapons and equipment. The defensive strategy places a priority on personnel over weapons. It originally envisioned conflict with an army invading overland as opposed to a seaborne threat. In one of his writings on strategy Mao states his

belief in the value of utilizing superior force to overwhelm China's adversaries:

Make wiping out the enemy's effective strength our main objective; do not make holding or seizing a city or place our main objective. In every battle, concentrate an absolutely superior force (two, three, four or sometimes even five or six times the enemy's strength), encircle the enemy forces completely, strive to wipe them out thoroughly and do not let any escape from the net. Fight no battle unprepared, fight no battle you are not sure of winning.³⁷

Although primarily defensive in nature, the PRC's initial national military strategy justified offensive operations short distances beyond its borders if required. The offensive aspect of this defensive doctrine was based on the overwhelming size of the Chinese army and its ability to fall back into a defensive position and win a protracted conflict. The concept of People's War assumed victory could be achieved through a battle of attrition with China's vast, ill-equipped army opposing an enemy force possessing more sophisticated weaponry. At this early stage in the PRC's strategic evolution, ideological "Red" values were deemed more valuable than "expert" skills by the CCP leadership.

B. DENG, THE "FOUR MODERNIZATIONS" AND DEFENSE REFORM

Defense reform in the PRC began in earnest following Deng Xiaoping's consolidation of power in 1978. During the 1960s and the first half of the 1970s, military modernization and armament self-sufficiency were hampered by the internal chaos associated with both the Great Leap Forward and the Cultural Revolution. Mao's attempts to reinvigorate the revolution, often at the expense of the educated portion of his society, weakened an already frail technological infrastructure and brain trust. Deng, during the Party Central Committee's Military Commission meeting in 1975, declared that the PLA was oversized and inadequately equipped to conduct modern warfare. Following his

consolidation of power at the Third Plenum of the 11th Party Congress in 1978, Deng initiated defense modernization as part of China's economic developmental priorities known as the "Four Modernizations," which included agriculture, industry, technology and the military.

Deng believed that modernization of the military-industrial base could only be achieved in coordination with accelerated research and development in science and technology and by the streamlining of an antiquated industrial infrastructure that was a burden on the national budget.³⁸ One of the long-term objectives of Deng's defense modernization was to provide China with a capability to design and produce its own arms by the turn of the century.

The defense portion of the Four Modernizations program began a process Deng hoped would allow China to take its place among the world's leading military powers in the 21st century. The program initially modified the existing force structure by increasing its immediate combat capability. The PLA's weaponry would be improved primarily by upgrading existing weapons. Concurrent with Deng's rise to the head of the CCP, the strategic culture of the PRC began to emphasize expertise over ideological fervor.

C. FAILURE IN VIETNAM

Deng's contention that the PLA was a weak fighting force with poorly trained and supported troops, equipped with weapons technology 20-30 years behind the state of the art, was confirmed by the PLA's performance in the Sino-Vietnamese border war of February through March 1979. The ineffectual and costly campaign strengthened the elements in the army advocating a thorough modernization of the army's organizational structures and

equipment.³⁹ Instead of teaching the Vietnamese a lesson, as had been Deng's intention at the outset of the conflict, the incursion resulted in the PLA losing face in a war against a small regional neighbor.

The PLA entered the conflict with Vietnam assuming that their numerical superiority would result in a quick PRC victory, much in the way the offensive elements of People's War was supposed to function. The PLA, however, failed to take into consideration the fact that the Vietnamese military had been involved in conflict from the early 1940s through the 1970s: first against the Japanese, then against the French, followed by the Americans and finally in Cambodia. As a result of the near continual fighting, the Vietnamese troops, including the reserves along the northern border, were more skillful than their Chinese counterparts. Another key issue in the conflict was the disparity in the sophistication of the combatants' arsenals. As a Soviet client state, much of the Vietnamese weaponry was more advanced than the PLA equipment. Beijing learned that modern weapons and organization provided a force multiplier, which was used by the Vietnamese to offset the PLA's superior numbers.

D. A NATIONAL MILITARY STRATEGY REDEFINED

In the mid-1980s, the PLA redefined its military strategy from focusing on a general global war to preparing for limited, local wars around China's periphery. The PLA was notified of the major national defense strategy change by the CCP's Central Military Commission (CMC) in June 1985.⁴⁰ Local war emphasizes speed, surprise, short duration and limited scope which requires advanced modern weapons to provide long-range power-

projection, mobility, and off-shore mobility.⁴¹ This fundamental strategy change from a global to regional view, which remains in effect today, forced the military to prepare for conflicts requiring quick and lethal responses with technologically advanced weapons.

Deng Xiaoping's new national strategy – "People's War under modern conditions" – called for a smaller, highly trained force equipped with high-tech weaponry as opposed to a massive, poorly coordinated army armed with low-tech platforms required under the previous guidelines of Mao's original People's War. The PLA leadership remembered the lessons learned about facing more modern weapons derived from the Vietnam conflict. New operating concepts were developed, calling for speed and lethality in combat rather than defensive oriented attrition warfare based on social mobilization. As a result of the new emphasis on regional conflicts, the air force and navy have priority in obtaining funds for weapons procurement because they are crucial to the PLA's goal of extending its power projection capabilities.⁴² Another important aspect of the CMC's decision was that it began a reorientation of the PLA's threat axis from the bordering continental countries in the north to the southern maritime regions.

Following the June CMC announcement, Chinese military journals identified five types of limited conflict on which the PLA should focus: "(1) small-scale conflicts restricted to contested border territory, (2) conflicts over territorial seas and islands, (3) surprise air attacks, (4) defense against deliberately limited attacks into Chinese territory, and (5) 'punitive counterattacks' launched by China into enemy territory to 'oppose invasion, protect sovereignty, or to uphold justice and dispel threats.'"⁴³ In response to the new strategic guidance, the PLA began to search the littoral region for areas, especially in the vicinity of

Taiwan and the potentially resource valuable Spratly and Paracel islands, which might prove to be flashpoints with regional neighbors. Beijing's new national military strategy required that the PLA prepare for early, offensive operations designed to defeat an adversary quickly, decisively and potentially at some distance from the mainland.⁴⁴ Luckily the PLA had a doctrine approach that fit the new mission: "active defense."

Active defense is an aspect of PLA doctrine and strategy which has its roots in the Communist Revolution. Senior Colonel Wang Naiming, a member of the Strategy Department at the Academy of Military Science in Beijing, notes,

It requires the organic integration of offense and defense, and achieving the strategic goal of defense by active offense; when the condition is ripe, the strategic defense should be led to counter attack and offense.⁴⁵

The Chinese idea of active defense can be considered another description for power projection, specifically when one considers the Taiwan Strait or areas of the South China Sea. Downing notes that PRC naval strategists consider that "'active defense' is defense exercised for anti-attack purposes, that is it does not exclude the possibility of offensive strikes for the purpose of self-defense or for offense after a period of defense."⁴⁶ Following the national defense strategy change of 1985, the PLA had the concept of active defense to work with, but the PLAN and PLAAF equipment was woefully obsolete for the mission requirements.

Western reaction to the events of Tiananmen Square in the spring of 1989, combined with the end of the Cold War, completed the reorientation of the PLA's threat axis from the bordering northern countries to the southern maritime regions. According to Godwin, "when the Soviet Union was China's principal threat and Beijing's military strategy was based on

defending continental China, most of the PLA's technological weaknesses could be overcome by a strategy of protraction, attrition, and the threat of nuclear retaliation – the so-called people's war under modern conditions.”⁴⁷ Even prior to the 1985 CMC meeting, however, Deng Xiaoping's “strategic changes in the guiding thoughts of national defense constructions and army building” abandoned the estimate that a world war or invasion of China were imminent.⁴⁸ As a result of this change, Beijing's defense plans focused less on the need for a huge army to defend against a major attack against China and more on modern naval and air force assets capable of projecting power in support of national sovereignty and the economy. The breakup of the Soviet Union and ensuing agreements between Beijing and Moscow allowed the PRC to accelerate the shift from a northern looking security orientation to a southern view.

While the CCP leadership believed that their country's security was enhanced by the agreements between Beijing and Moscow, the PLA defense challenges were not reduced by the shift from the continental to littoral focus. Godwin points out that “as the cold war ended, China began preparing for local, limited war on its periphery, including the defense of maritime borders and territorial claims in the East and South China Seas; this new orientation accentuated the obsolescence of the PLA's arms and equipment far more than had the requirements for continental defense.”⁴⁹ Land warfare still had some advantages for a large force like the PLA, if only from a defensive standpoint, but power-projection requirements in the maritime arena drastically favored high technology over massive armies. Additionally, the PLAN and the PLAAF of the early 1990s were not power-projection forces, rather they were used to playing supporting roles for the army.

E. THE GULF WAR

Two recent international incidents have reinforced the PLA's contention that high-technology weapons are needed to carry out the strategic missions dictated by the CMC: the 1991 Gulf War and the 1996 Taiwan Strait intervention. The media often refers to Desert Storm as a showcase for the effectiveness of Western armaments. The coalition demonstrated the capabilities of high-technology arms utilized by well-trained forces. The advanced Western weaponry proved more than a match for the Iraqi equipment, the majority of which was of Chinese origin. Chong-Pin Lin contends, "The dazzling performance of high-tech weapons in the January 1991 Gulf War astounded the PLA high command, hesitant until that time to abandon the People's War mentality, into consensus on the urgent need for a 'quality construction.'"⁵⁰ Coalition forces demonstrated that in desert terrain, their target acquisition and munition lethality was far superior to that provided by Chinese technology.

Chinese anti-ship Silkworm missiles also fared poorly against U.S. naval defenses during the Gulf War.⁵¹ The PLAAF took special notice of the allied air forces' complete control of the regional airspace and its affect on Iraqi forces. While airpower was viewed as important in China's military modernization effort, only after the Gulf War did the senior PLA leadership demonstrate any real appreciation of the implications of complete airspace domination.⁵² In addition, Gulf War joint and combined operations made a significant impact on the PLA thinking, resulting in an emphasis placed on Chinese joint training.⁵³ Godwin points out that "in a direct response to the Gulf War's demonstration of high-technology warfare, China's military leadership modified its definition of future military

contingencies from 'limited, local war' to 'limited war under high-tech conditions'."⁵⁴ Overall, allied airspace dominance, sophisticated command and control capabilities, precision-guided munitions and highly accurate cruise missiles demonstrated high-technology warfare, the importance of which was not lost on the PLA.

Under direct orders of the CMC, the PLA's General Staff, Political, and Logistics Departments and all the academies analyzed the Gulf War from different perspectives to maximize the amount learned from the coalition victory. Following up on the seven major conclusions drawn from the numerous studies, the Chinese National Defense University (CNDU) recommended that the PLA:

(1) reduce the number of soldiers and improve the armed forces' equipment, training quality, and actual combat capability; (2) give priority to conventional arms over nuclear weapons; (3) introduce high technology, including advanced guidance systems, pinpoint accuracy bombing, weapons of mass destruction, and stealth aircraft; and (4) build a rapid-response force.⁵⁵

Of particular interest are points (1) and (3) which emphasize the importance of advanced weapons. A significant corollary to this point is the poor track record the PRC has with respect to producing advanced conventional platforms and how that has affected PLA procurement options. In 1993 the PLA leadership integrated the CNDU goals into their military modernization plan to emphasize acquisition of military technology and capabilities geared toward meeting the challenges presented by local and limited wars.

F. 1996 TAIWAN CRISIS

The proximity of high-tech threats to China's vital interests was brought into focus during March 1996. The U.S. Navy's reaction to PLA exercise "Strait 961," conducted from

8-25 March in the Fujian and Guangdong Military Districts opposite Taiwan, demonstrated both the mobility of U.S. Navy's CVBGs and America's willingness to become involved in what the Chinese perceive to be their internal affairs. The two CVBGs that approached the Taiwan Strait contained formidable firepower in the form of high performance fourth generation fighter and attack aircraft, nuclear powered attack submarines armed with torpedoes and cruise missiles and escort ships equipped with the AEGIS missile and air defense system. The potential battle area of the Taiwan Strait provides American advanced weaponry an open environment similar to the desert terrain conditions of the Gulf War, which puts technologically outclassed PLA hardware at serious risk. Although no direct armed confrontations between the U.S. Navy and the PLA occurred during Strait 961, Beijing was not pleased with the American intervention in their internal affairs.

In Beijing's view, the primary security and military threat to the PRC lies in the Taiwan independence movement and indirectly the potential involvement of U.S. Navy CVBGs in the event of military action. Both Beijing and Washington hope for a peaceful resolution to the issue of reunification between Taiwan and the mainland, but since the PRC will not rule out the use of force against the island, the possibility of U.S. Navy/PLA confrontation exists. According to Bernstein and Munro, the U.S. Navy response to Strait 961, considered a form of American "gunboat diplomacy" by the PRC, has resulted in the PLA stepping up its efforts to acquire two capabilities: "a credible Taiwan invasion force and the capacity to sink American aircraft carriers should the United States interfere militarily in the China-Taiwan issue."⁵⁶ While acquisition of a force capable of invading Taiwan is a

clearly long-term endeavor, development of a capability to contend with unwanted U.S. Navy intervention in China's internal issues is a PLA priority.

As early as 1995, Chinese studies were underway to identify ways to prevent external intervention, interpreted as U.S.-led Western naval forces, in PLA operations.⁵⁷ A PLA approach to dealing with Taiwan involves denying Taiwan the military support of the U.S. Navy by having a credible ability to block the arrival of U.S. Navy CVBGs in the area of the Taiwan Strait.⁵⁸ The following quotation from *Defense & Foreign Affairs Strategic Policy* describes the direction and motivation behind Beijing's military strategy:

The acquisition of submarines is but one component of the PLA's evolution into an assertive regional force. The PLA now seeks more than regional intervention capabilities. The added mission is a direct outcome of the deployment of two US aircraft carriers during the crisis of 1996. Beijing is now determined to have the PLA not only capable of reaching the entire area coveted by the PRC, but also to be able to operate in remote areas against US naval forces. Beijing is adamant on keeping the US Navy as far away from the primary areas of Chinese military operations as possible. The main weapon system purchased from Russia - long-range aircraft and modern naval combatants - will enhance the PLA's ability to carry out these tasks.⁵⁹

Although it is impossible to determine whether PLAAF and PLAN forces could succeed in preventing the U.S. Navy from approaching Taiwan in the event of hostilities with the mainland, the message is clear that Beijing views the military capabilities of the U.S. Navy as the major threat to PRC actions with respect to Taiwan, and the primary military force to be reckoned with.

G. CONCLUSION

Analysis of the evolution of the PRC's national defense strategy from "People's War," to "People's War under modern conditions," to "Limited, Local War" and ultimately

to "Limited, Local War under high-technology conditions," shows that China has completed a significant transition in geographic orientation from north to south. As part of this redirection toward the littoral region, the PLA has placed primary importance on improving the power-projection capabilities of the PLAN and the PLAAF. Lessons from the Vietnam incursion and especially Desert Storm reinforced the Chinese belief in the importance of high-technology weapons. During the same period, the PLA's "red-versus-expert problem" was resolved as emphasis ultimately shifted from ideology to expertise.

Once the strategic culture adjusted to new national priorities, the PLA's identification of a primary threat to the PRC was possible. Between resource issues in the South China Sea and the independence movement in Taipei, the territorial integrity issue of Taiwan is the most pressing issue. Furthermore, U.S. willingness to become involved in what the PRC leadership believes to be a domestic issue led the PLA to consider how to prevent U.S. Navy interference in China-Taiwan affairs using an active offshore defense doctrine.

IV. HISTORICAL LEGACIES OF CHINESE ARMS PROCUREMENT

The preceding chapter presented an overview of the evolution of China's national military strategy since 1949 and how that change resulted in the identification of the U.S. Navy as the PRC's primary threat. After identifying the most pressing threat, the PLA had to decide on the most appropriate equipment procurement strategy to accommodate short-term arms requirements and long-term development of an advanced military-industrial infrastructure. China's history of reliance on foreign weapons and past attempts to improve its weak indigenous military-industrial infrastructure continues to influence the PLA's equipment modernization efforts. Military modernization rarely comes without political, economic or technical costs, and the PRC's equipment program is no exception. This chapter addresses China's pursuit of a viable cutting-edge arms industry and identifies the impact of this experience on the present PLA modernization program.

A significant dilemma that has repeatedly faced China during the last 150 years is the choice between acquiring advanced foreign weaponry or attempting self-sufficient arms development and production. To solve this dilemma, China has attempted a mixture of the two approaches with varying degrees of success. At present, Beijing is attempting to modernize both its forces and indigenous arms production capability nearly simultaneously to close the PLA's conventional weapons capability gap with the West. The value of this two-pronged approach is that procurement of advanced foreign systems provides a near-term capability to support immediate PLA needs while simultaneous application of transferred technology to the PRC's military-industrial complex provides the basis for future indigenous

development and production of sophisticated armaments.

A. FOREIGN ACQUISITION AS A MEANS TO AN END

PLA planners have viewed acquisition of foreign weaponry and technology as a method to obtain the newest available arms while assisting the national defense technology sector to attain self-sufficiency. Gill and Kim point out that "of critical importance to the strategies of such modernizers was the insistence that China not simply import complete weapon systems but also learn from foreign production techniques in order to establish a self-sufficiency in arms production."⁶⁰ Adding to the problem of choosing between foreign purchase and indigenous production of sophisticated weaponry are the often suspect capabilities of the Chinese defense industrial infrastructure and its associated R&D capabilities. Wendy Frieman notes:

Domestic military R&D is deficient in nearly all areas of technology considered to be on the cutting edge of weapon development, including carbon fiber composites, reactive armor, microelectronics, cybernetics, avionics, seekers, electronic countermeasures and counter-countermeasures and jet engines....The Chinese philosophy toward military R&D and production is not conducive to working with advanced technology.⁶¹

These military-industrial infrastructure constraints have often limited the success of PRC attempts to purchase foreign weapons for reverse engineering and ultimate improvement of China's indigenous arms production capabilities.

B. SOME "COSTS" OF EQUIPMENT MODERNIZATION

Attempting to choose the "cheapest" route for military modernization is not as easy as it might initially appear. It may seem more sensible, and perhaps even less expensive, to purchase foreign arms which utilize modern technology as opposed to waiting for the

lengthy, costly development and subsequent production cycle to begin producing weapons. When the scope of modernization required by the PLA is taken into consideration, the option of purchasing one-for-one replacements becomes financially prohibitive. For this reason, the PRC's approach of purchasing a few examples of modern hardware, while seeking high technology transfer as part of the deal, makes sense. Through acquisition of co-production licences, modernization can begin while military-industrial R&D sectors learn how to apply the new technology to other products.

The Chinese have been quite successful at using arms sales to fund their attempts at modernization. Part of Deng's Four Modernizations and associated reforms put much of the fiscal responsibility for military equipment modernization on the PLA. The PLA discovered that there was an international market for low-technology weaponry. Chinese defense industries had the capabilities to service that market segment. Some of the funds generated from sales are used by the PLA to purchase newer weapons. The cycle is somewhat self-supporting, because new technologies purchased by China, provided they can be reverse-engineered or co-produced, will be available for export in the future. Bitzinger writes: "Arms exports and the foreign exchange they generate are crucial to the future modernization of the PLA. At the same time, the future potential for Chinese arms sales is greatly dependent upon the PRC's ability to produce more advanced weapons."⁶² One of the dangers of this method of capital generation is that it assumes the global arms market will stay strong. Recent years have shown a marked decline in the worldwide arms purchases, so the heyday of this type of "sales for purchases" may have already passed.

The PLA's need for force modernization and the desire for advanced technology presents another problem: over dependence on foreign suppliers. China has paid a heavy price for over dependence on foreign sources for its weapons. As a result, the desire for self-sufficiency in the weapons production arena is deeply rooted in the PLA's military psyche. During the Guomindang period (1927-1949), Chinese arms industries failed to develop and the country remained reliant on foreign assistance for weaponry. As a result of the dependence, specialized Chinese expertise went unused and scientific and technical expertise in the country deteriorated.⁶³ In 1949, this heavy reliance on foreign assistance provided the PRC with an extensive array of military equipment, but little capacity to either develop or produce modern arms.

C. EARLY DEPENDENCE ON THE USSR

China began to build up an indigenous arms-production capability with assistance from the Soviet Union in the 1950s. The PRC defense industry modeled itself on the Soviet model and followed the classic development path of weapon production: from assembly, to spare-parts production, to co-production under licence, and eventually to the manufacture of complete weapon systems.⁶⁴ This system of production appealed to the Chinese because once complete systems were ready to be produced, their plans were supposed to be modified to meet specific Chinese requirements. Reality is often less than ideal. A RAND study on the PRC's air force, for example, notes that "this long chain of events begins with a current aircraft, but ultimately results in domestic manufacture of an obsolete system."⁶⁵ This problem can be seen in the PLAAF today: the F-7 fighter variants currently in production are

Chinese modifications of the Mig-21 FISHBED, which represents early 1970s Soviet technology.

Soviet assistance during the 1950's allowed China to begin development of its own military-industrial infrastructure for weapons production. However, the worsening Sino-Soviet relationship in the late 1950s, followed by the subsequent withdrawal of Soviet advisors, aid and blueprints in 1960, reinforced the Chinese concerns about dependence on foreign sources of weapons. The Soviet withdrawal of support was a severe blow to defense modernization in China.⁶⁶ This led the PRC to look toward Western and non-Western sources for arms. Although the military contacts developed over the subsequent 30 years were useful, China was never able to procure cutting-edge weapons or significantly advance its indigenous production capabilities which remained based on 1950s techniques.

D. OF WESTERN SUPPLIERS AND A SINO-RUSSIAN WARMING

Following the Sino-Soviet split of 1960, it initially appeared that the United States would fill the PRC military modernization void created by the Soviet withdrawal. The PRC's primary value to the United States was as an ally against the Soviet Union. Even in that strategically significant capacity, however, U.S. equipment offered for Chinese purchase was less sophisticated than the equipment offered to other Western allies. Additionally, according to Gill and Kim, "the assimilation of Western technologies into the outdated Chinese defence industry turned out to be a Herculean task. China's low-cost, selective approach to Western arms and technology was aimed at maximally utilizing its current inventories, which were based on 1950s Soviet technology, designs and production

methods."⁶⁷ Although inroads were made during this period with the United States, Europe, Israel and Egypt, two events in the late 1980s and early 1990s resulted in greatly reduced Western arms exports to the PRC: the Tiananmen Square massacre and the collapse of the Soviet Union.

The Tiananmen Square massacre in June 1989 had a negative effect on Western military support and development programs with the PRC. Once again, China found itself in the midst of various modernization programs which had to be canceled due to the removal of foreign support. Advanced conventional weapons proliferation to China's regional neighbors and the one-sided results of the Gulf War increased the PLA's sense of urgency about modernizing its outdated forces.

As the PRC sought another source of advanced weaponry for its modernization program, international events resulted in a resumption of mutually beneficial Beijing-Moscow ties in 1989. Following the collapse of the Soviet Union, Russia was in great need of foreign capital in addition to firm orders necessary to keep its defense industries functioning. The fact that the PRC had an ongoing requirement for "superb and secret weapons" at the same time resulted in a warming of Sino-Russian relations. Gill and Kim argue that China saw four advantages to dealing with Russia again, although the leadership still remembered the Sino-Soviet split of 1960 and the negative repercussions it had in the military-industrial sector:

- (1) China's purchase of Russian weapons and technology was a logical way of correcting the deficiencies of the PLA's huge but largely outdated weapon inventory.
- (2) China wished to take advantage of the "buyers market" created by the end of the cold war.
- (3) Chinese imports were intended to bolster its

military position in Asia, commensurate with its increasing economic and diplomatic status. (4) China possibly hoped to re-export the acquired Russian technologies to other countries in a variety of forms.⁶⁸

The rapprochement between Moscow and Beijing provided the PLA with a potential source of cutting-edge weapons, but the willingness of Russia to provide the desired technology offsets was initially unknown.

A crucial indicator for the Chinese about how successful this relationship would be was whether or not Russia would sell its most modern arms as well as provide the advanced technology transfer, production techniques and technologies, and offset arrangements that could be applied to the existing PRC military-industrial complex. While PLA purchases of Su-27s, KILOs and SOVREMENNYs are militarily important, the Su-27 deal (covered in greater detail in the following chapter) is the best example of what the Chinese hoped to obtain from the Russians. Whether the agreement will be the quantum technological leap forward that the PLA is looking for remains uncertain, but the carefully nurtured post-1989 relationship between Moscow and Beijing has evolved to where China is considered a most valued customer of the Russian armament exporters. As of 1997, the PRC accounts for approximately 30 percent of Russian arms and defense equipment exports worth about US\$1.1 billion a year, and may negotiate directly with the Russian Defence Ministry about future arms purchases.⁶⁹

E. CONCLUSION

The end of the Cold War proved very beneficial to the PLA. Warming Sino-Russian relations have allowed the PRC to purchase Russia's most advanced weapons while

receiving significant technology transfer offsets intended to improve China's future military-industrial capabilities. Beijing has found a ready arms supplier in Russia, and the present PLA equipment modernization program would not be possible without the advanced systems being offered by Moscow. As the PRC's military-industrial sector acquires new capabilities in the future, the PLA may design and produce advanced weapons. Additionally, future PRC arms exports will include more sophisticated systems and continue to be a source of revenue for hard currency to be used in further PLA weapons R&D and acquisition.

Attempts at PLA equipment modernization have been hindered by China's legacy of a weak indigenous military-industrial sector. This legacy continues to dictate some attributes of the present program. Beijing has been forced to weigh the dangers of over dependence on foreign suppliers against the increasingly sophisticated threats along China's littoral periphery. The advanced capabilities of Western arms demonstrated in the Gulf War showed a quantum leap in performance from previous generations of weapons. The preferred PRC approach of integrating advanced components into outdated platforms while waiting for the indigenous industries to provide a complete cutting-edge weapon system is no longer a viable option for the Chinese military. The goal of the PRC's military equipment acquisition program is to provide the PLA with advanced foreign systems in the short-term to deal with potential high-technology threats, like those posed by U.S. Navy CVBGs, while utilizing associated technology transfers to improve its indigenous capabilities for the long-term. While the present emphasis is on foreign procurement of modern weaponry, the PRC intends to design and produce the majority of its high-technology arms in the future.

V. PRESENT PLA ACQUISITIONS

This chapter describes the PRC's equipment acquisition program and its plan to address the threat posed by the U.S. Navy. It also provides a description of the status of PLAN and PLAAF modernization. The significance of three recent highly-publicized purchases from Russia, Su-27 FLANKERS, KILO-class submarines and SOVREMENNY-class destroyers will be explained. These acquisitions represent technological advances in Chinese air, surface and submarine capabilities which support PLA power projection and the active offshore defense doctrine.

A. PROGRAM GOALS

The primary goal of PLA modernization appears to be the procurement of advanced platforms to respond to the perceived threat posed by the U.S. Navy. The PLA must consider the issues of procurement timeliness and system capabilities when considering various modernization options. The PRC is in the unenviable position of trying to develop a force capable of countering the world's most technologically advanced navy. This must be accomplished with outdated indigenous equipment and production facilities. As long as the PRC does not want to pursue asymmetric capabilities like chemical and biological weapons, the ideal conventional solution for the PLA would be Chinese arms industries producing cutting-edge weaponry on par with the most advanced systems in the United States, Western Europe and Russia. Since the PRC's military-industrial complex is not advanced enough to deliver arms of that sophistication, Beijing must do its best to follow a procurement course to provide for both today's needs and tomorrow's desires.

The lessons of the 1950s dependence on the Soviet Union followed by the 1972-1989 reliance on Western sources for weapons acquisition have reinforced the PRC's desire for self-sufficiency in arms production. This aspiration for self-sufficiency occasionally leads the leadership to overstate present capabilities. According to PLA senior officers:

Jiang Zemin has emphasized time and time again that self-reliance should be the key work in strengthening our Army's modernization. Judging by this, in developing its arsenal for cross-century purposes, the PLA will continue to adhere to the principle of mainly relying on self-reliance and drawing on foreign experience to a limited extent.⁷⁰

The present phase of the equipment modernization program emphasizes maximum utilization of foreign systems, with little emphasis on the development of self-reliance. The resumption of mutually beneficial Beijing-Moscow ties in 1989 provided the PLA with a critical source for advanced weapons and technology required to address the equipment deficiencies existing in the PLAAF and the PLAN.

B. STATUS OF THE PLAAF AND THE PLAN

The new littoral focus of the PLA military strategy and the advanced capabilities of the U.S. military directly contribute to the PLA leadership's belief in the general obsolescence of its equipment. Due to the primary role that the PLAAF and the PLAN will play in any future engagement of the U.S. Navy in the vicinity of the Taiwan Strait, it is valuable to examine each service arm's major problems. The PLAAF has always been the technologically weakest leg of the PLA. It is in the greatest need of modernization due to its large supply of 1950s, Soviet-designed aircraft that were re-engineered, modified and produced in China during the 1960s and 1970s.⁷¹ The PLAAF is also deficient in advanced munitions, electronic warfare systems and logistics and training.⁷² Indigenously, the Chinese

air force is developing the fourth generation F-10 multi-role fighter, but it estimates operational squadron service will not begin until 2005.⁷³ This time table may be optimistic in light of recent program delays. In an attempt to improve the technological level of its active fighter force while acquiring valuable advanced technology and production techniques, the PLAAF initiated acquisition of the advanced fourth generation Su-27 FLANKER multi-role fighters from Russia in 1990.⁷⁴

The PLAN does not have the sophisticated weaponry and sensors found on U.S. Navy combatants, nor does the PLAN have an aircraft carrier for power projection outside territorial waters. Although in terms of vessels the PLAN is numerically the third largest navy in the world, in qualitative terms measured against other navies in Asia, Shambaugh contends "the Japanese naval Self-Defense Force, the Indian Navy and the combined naval forces of the ASEAN nations and elements of Taiwan's Navy are all superior to the PLAN."⁷⁵ In 1991, the PLAN commander, Admiral Zhang Lianzhong, described the priorities for the navy: "The present trend of development is towards guided missiles, electronics, nuclear capability and automation, to be gradually achieved through repairing and refitting old vessels, purchases from abroad, transferred technologies, and improving on existing models."⁷⁶ In the light of Desert Storm, even greater emphasis has been placed on acquiring advanced capabilities. While newer Chinese LUHU-class destroyers and JIANGWEI-class frigates are the PLAN's most modern, indigenously-built warships and provide significant improvements over their predecessors, they are still lacking in air defense, ASW and targeting. To counter the sophisticated anti-air capabilities of U.S. Navy AEGIS equipped ships and the layered threats posed by U.S. Navy CVBGs, the Chinese navy has

agreed to purchase two SOVREMENNY-class destroyers from Russia. In the sub-surface realm, the first indigenously manufactured SONG-class sub was launched in 1994, but the PLAN also purchased four KILO-class submarines from Russia which increase the fleet's stealthy power-projection capabilities. According to Shambaugh, "The PLAN's submarine force is making the greatest advances at present, and this has tremendous implications for Taiwan's defence as well as maritime shipping in the region."⁷⁷

C. SU-27 FLANKERS: BETTING ON THE FUTURE

The Chinese hope that the purchase of a small number of fourth generation fighter aircraft, the Su-27 FLANKER, with the associated technology transfer involved in the co-production agreement, will allow the PLAAF and the military aviation industrial complex to skip part of the R&D process necessary to develop and produce advanced generation aircraft. Due to the delays associated with the indigenous F-10 program, much of the PLAAF's near term capabilities will be based on the FLANKERS.

The Chinese air force has been in a precarious position since the 1985 strategy shift toward a focus on local limited wars on the periphery of China. At that point, the PRC emphasized obtaining the power-projection capabilities of modern aircraft. Although the change was welcomed from the standpoint that it both fit well with the PLAAF's desire to upgrade its equipment and the PRC's desire to better "defend" its interests in the South China Sea, the fact that the PLAAF is comprised of thousands of obsolete Soviet-era combat aircraft and is deficient in advanced munitions, electronic warfare systems, logistics, and training made supporting that strategy a very difficult proposition.⁷⁸ Acquisition of the Su-27 gives the PLAAF its first platform roughly comparable, at least in performance

characteristics, to front-line U.S. fighters. The additional co-production rights will allow procurement of a larger number of FLANKERs while providing transfer of valuable aviation technology and advanced production techniques.

Negotiations between Beijing and Moscow over the potential sale of Su-27s began in August 1990, with the initial agreement reached in March 1991. Under the terms of the contract, China reportedly paid more than US\$1 billion for 26 Su-27s and related armament, missiles, logistics, and pilot training.⁷⁹ Besides being a front line fighter for Russia, the armament on the aircraft, including AA-10 ALAMO semi-active radar homing air-to-air missiles and AA-8 APHID and AA-11 ARCHER infrared guided air-to-air missiles, provided a significant advance over the existing air-to-air missiles in the PLAAF inventory. The first FLANKERs arrived at Wuhu Air Base approximately 150 miles east of Shanghai in 1993 and assessed as operational in 1995.⁸⁰ Purchase of a second group of 22 Su-27s were a prelude to a larger co-production deal which the PLA had been interested in from the beginning of negotiations.⁸¹ The second batch arrived at Suixi Air Base in Southern China to coincide with Boris Yeltsin's visit to China in April 1996, and may become operational by early 1998.⁸²

The \$2.2 billion licensed production deal reached in late 1995, expected to be in effect for approximately 15 years, is an integral part of the PLAAF's modernization effort. Reportedly, a third batch of 24 airframes is to be delivered for local assembly at a manufacturing facility that is part of Shenyang Aircraft Corporation (SAC).⁸³ The SAC FLANKER production line, entirely imported from Russia, should begin to carry out batch

production within the next few years.⁸⁴ It is estimated that production rates will begin slowly, eventually reaching 15 to 20 Su-27s a year. It appears that the co-production agreement does not allow for eventual Chinese export of PRC-built Su-27s to third party nations. While the total number of Chinese Su-27s to be produced is still in question, the total might exceed 100. If China masters full co-production, the total produced could exceed several hundred.⁸⁵ The issue of whether or not China will master full co-production of the Su-27 is significant, because the aircraft incorporates advanced technology which the Chinese have little experience handling and cannot yet produce.⁸⁶ Although potential production challenges loom on the horizon, PLA aircraft manufacturers undoubtedly will benefit from advanced Russian production techniques and from the presence of Russian technicians who will assist Su-27 assembly and eventual production at SAC.

For the PLAAF, acquisition of the Su-27s and the associated production license marks a major modernization milestone for the Chinese Air Force. In reference to the PLAAF's Su-27s, Lt Gen Liu Shunyao, the PLAAF commander, said, "The Chinese air force is now able to fight defensive and offensive battles under high-technology conditions...We shall focus our efforts on applying (new technology) to raising combat effectiveness of troops while importing some weapons that have higher accuracy in hitting the target."⁸⁷ The Chinese have very high expectations about the new capabilities the aircraft will give them, especially with respect to the increased range and endurance it provides for operations along the coastal areas of China.

The Su-27s represent a significant upgrade for the PLAAF arsenal. The FLANKER

is an extremely capable aircraft with the range to allow PLAAF coverage of the disputed areas in the South China Sea and reaching Taiwan and U.S. bases on Okinawa. It approximates the performance of U.S. manufactured aircraft in the region. When the multi-role fighter is fully integrated into the PLAAF, it will provide the PLA with a substantial weapon to use against U.S. Navy CVBG air and surface assets.

D. KILOs: STEALTH FOR POWER PROJECTION

The Chinese naval leadership believes that the submarine can be a force multiplier in a maritime conflict. A May 1997 PLAN study suggests that since 1994, the PLAN has been capable of restraining and deterring U.S. Navy activities through the use of attack submarines.⁸⁸ To augment their submarine force with advanced platforms, the PLAN purchased four KILO-class diesel-electric submarines from Russia. Two 877 export models were delivered in 1995. The first of two 636 Russian navy versions arrived in China in 1997. All four subs will be based at the South Sea Fleet facility at Zhanjiang. According to the U.S. Office of Naval Intelligence (ONI), "the Project 636 Class previously has not been exported, and to date has only seen service with the Russian Navy. The acquisition of these improved KILOs will provide the Chinese technological improvements in the areas of sonar design and quieting."⁸⁹ The KILOs destined for the PRC have been exported with both advanced wire-guided acoustic and wake-homing torpedoes.

The ONI study states that the missions of the PLAN submarine force include safeguarding China's territorial integrity and national unity, conducting a possible blockade of Taiwan and defeating any seaborne invasion. In conjunction with ONI's assessment, I

contend these goals indicate the Chinese navy will use their submarines for blockading operations, to include blockading of U.S. Navy CVBGs attempting to intervene in a Taiwan crisis. RADM Eric McVadon (RET), former U.S. Defense Attache in Beijing, has suggested that due to the KILO's stealthiness (especially when compared to older Chinese ROMEO-class submarines), U.S. commanders would not be as confident about detecting and avoiding the KILOs, or being able to sink them should hostilities begin. The great value of the new submarines to the PLAN is not that they can defeat the U.S. Seventh Fleet in a war at sea, but that the American leaders might think twice before deploying the carriers off Taiwan or delay a decision long enough to give the PRC some advantage.⁹⁰ The KILOs will be able to support all of these missions. Because of their speed and stealth, they will pose a formidable threat when integrated into the navy.

E. SOVREMENNYs: A "BIG STICK" FOR THE PLAN

The PLAN has acquired another modern Russian naval platform to threaten U.S. Navy CVBGs. In 1997, the PRC agreed to purchase two SOVREMENNY-class guided-missile destroyers. The purchase is probably aimed at reducing the chance of future U.S. deployments of warships around Taiwan.⁹¹ Initial discussions about possible ship purchases between Moscow and Beijing took place in the mid-1990s. While the U.S. Navy actions around Taiwan in 1996 are considered the final incentive to press ahead with the purchase, it was not until March 1997 that the sale was finalized during a visit of the Chinese Deputy Prime Minister Qichen Qian to Moscow.⁹² The estimated cost for the destroyers is approximately \$400 million each, with delivery of the two ships taking place in 1999 and

2000 respectively.⁹³ Like the sale of the KILO 636 versions to the PRC, the SOVREMENNY sale marks the first export of several state-of-the-art Russian weapon systems which include the supersonic SS-N-22 anti-ship missile, the SA-N-7 air defense missile, new electronic warfare systems and other naval technology.⁹⁴

The PLAN acquisition of the Russian destroyers can be viewed as the clearest indication that the PLA modernization program results from Beijing's perception of the U.S. Navy as China's predominant threat. The primary anti-surface armament on the SOVREMENNY-class is the 150 km range SS-N-22 SUNBURN supersonic anti-ship missile which was designed to counter U.S. AEGIS-equipped ships by crippling America's ability to monitor the aerial environment in maritime theaters.⁹⁵ Since the AEGIS SPY-1 radar is the primary sensor for defeating anti-ship cruise missiles and providing a composite air picture, removal of the AEGIS-equipped ships from a potential PLAN conflict with the U.S. Navy would make the CVBGs more vulnerable to missile and air attack. McVadon suggests that although PLAN sources are quick to describe the SOVREMENNYs as ships meant to counter Taiwan and not threaten U.S. aircraft carriers, the advanced destroyers do add to the threat of a pre-emptive attack against Seventh Fleet assets in a crisis.⁹⁶

F. CONCLUSION

PLA procurement of FLANKERs, KILOs and SOVREMENNYs fulfill some PLAAF and PLAN near-term requirements resulting from the PRC's national defense strategy and specifically the leadership's perception of the U.S. Navy CVBG "threat." The SOVREMENNY destroyers armed with highly capable SS-N-22s will provide an order of

magnitude improvement for the PLAN surface forces and enhance the Chinese Navy's long-range offensive and sea denial capabilities.⁹⁷ Likewise, the PLAN's KILO submarines provide a qualitative improvement over her older diesel-electric boats in both stealth and weapons capability. The PLAAF's FLANKER air-superiority fighter program is the best understood of the three purchases. The Su-27 will be the PLAAF's premier fighter for the immediate future, and it is extremely capable when operated to its potential. The expanded area of operations provided by the FLANKER's range will allow the PLA a more potent air power-projection posture. The Beijing-Moscow fighter agreement is perhaps more valuable to the PLA from the considerable technology transfer aspect of the equation. In time, the production technique assistance and advanced technology transferred to the PRC will contribute to a more advanced and robust military-industrial infrastructure. The leadership hopes this will allow the PLA to import fewer platforms while relying on indigenous arms producers to provide the lion's share of modern weapons.

Viewed as a group, the capabilities of the FLANKERs, KILOs and SOVREMENNYs greatly increase the power-projection ability of the PLA. The scale of these purchases, however, is limited. Presently, the two Su-27 regiments represent only two percent of the PLAAF's frontline strength.⁹⁸ Known PLAN plans only include purchase of four KILOs and two SOVREMENNYs, which, while it does increase the capabilities of the navy, does not in and of itself comprise a complete force modernization.

Although these systems could be utilized in different scenarios in the South China Sea and would be employed in any direct conflict with Taiwan, they provide much greater deterrent value when the PRC's leadership considers the "American element" of a Beijing-

Taipei confrontation. Of primary importance is evaluating these platforms as a response to the prime motivation for the present PLA modernization: the desire to deter the U.S. Navy, especially CVBGs, from interfering in PRC territorial integrity issues. The combined capabilities of these weapons will not guarantee a victory over the Seventh Fleet in a war at sea, but they will give the U.S. leadership reason for increased caution with respect to American intervention.

VI. CONCLUSION

By the end of the Gulf War the CCP's "red-versus-expert" debate of the late 1950s and early 1960s had been resolved in favor of the "expert" technology advocates. The PRC's changing strategic culture involved a modification from tactics appropriate for a northern-facing, army-dominated, view to those applicable for a southern looking, PLAN and PLAAF dominated, maritime perspective. Once the PLA evaluated the new littoral area of operations in conjunction with the national defense strategy, the primary threat – the U.S. Navy – was identified. The Gulf War illustrated the effect of high-technology weapons in battle, and notified the PLA leaders that much of their equipment was obsolete. With an identified threat and an acknowledged need for advanced weaponry, the most appropriate equipment procurement program for short and long-term requirements was determined.

A. MOTIVATIONS EXPOSED

When recent PRC purchases of Su-27 FLANKERs, KILO-class submarines and SOVREMENNY-class destroyers are evaluated in terms of the competing motivations for PLA equipment modernization, strategic considerations become paramount. The three platforms do not support the two categories of political motivations — achievement of great power status or support of CCP political legitimacy and self-preservation — because they are PLAN and PLAAF focused with little applicability to the army component of the PLA. Both political motivations would emphasize advanced capabilities in all three services, not just power-projection systems for two branches. Although the three systems add a more modern component to the force structure, which would support development of a great power

military, the numbers procured are too small to even begin to transform China into a great power.

The two motivations for equipment modernization discussed under the economic category — force expansion as a result of expanding economic interests and modernization of the defense industrial base and R&D capabilities — fail to explain the PLA's Russian purchases. Although all three platforms will enable greater coverage of the littoral area considered vital to the PRC, they provide power-projection capabilities and are less suited to the patrolling duties that would be prioritized by an economy driven force expansion. The FLANKER agreement responds to the second motivation, because the technology transfer associated with that purchase is considered vital for future indigenous aviation efforts, but the KILO and SOVREMENNY sales, which do not have any co-production agreements, do not appear to have the same overt value to China's military-industrial infrastructure.

Evaluation of the PLAAF/PLAN purchases as a response to sovereignty concerns sheds light on the more likely goal of China's military equipment modernization program. National sovereignty issues are of the greatest importance to the PRC. The strategic issues associated with the South China Sea are secondary in importance when the Taiwan issue is considered. Further consideration of the "American element" in any potential conflict clarifies the primary modernization motivation. While all three weapons could be utilized in a conflict between the island and the mainland, they fail to address some of the critical needs of the PLA in the event of a conflict between Taipei and Beijing, such as AAW and ASW requirements for other PLAN surface platforms and AWACS-type aircraft to manage the associated air battle. KILOs could assist in blockade operations, and the

SOVREMENNYs could be used against Taiwanese frigates, but with only two of the destroyers on order, they would have little hope of surviving a battle against Taiwan's surface navy.

The value of all three platforms becomes apparent when one considers their deterrence value against U.S. Navy CVBGs. The power-projection capabilities of the SS-N-22 armed SOVREMENNYs, stealthy KILOs or fourth generation FLANKERs against CVBG assets are significant from the standpoint that they may deter immediate American intervention in the event of a conflict incited by a Taiwanese declaration of independence. These three platforms represent an almost immediate capability enhancement for the PLA.

B. FUTURE OPTIONS FOR EQUIPMENT MODERNIZATION

There are a finite number of approaches the PRC leadership can utilize to address PLA military modernization in the future. Those solutions include exclusive foreign acquisition of advanced platforms, strictly indigenous production of modern weapons, emphasis on enhanced older equipment, or a combination of options. Each approach has its advantages and disadvantages, but when the primary high-technology threat posed by the U.S. Navy is factored into the puzzle, a prediction can be offered about Beijing's future course of action.

1. The Foreign Option

The exclusive foreign acquisition alternative would supply the PLA with current military platforms from foreign sources to constitute a force capable of engaging a U.S. Navy CVBG. Advanced military weapons can be acquired from countries like Russia, Israel and some Western European nations. This choice has the advantages of providing the PLA with

very timely procurement of the most capable military technology available. But, it is the most costly choice from a hard currency standpoint, and it results in continued dependence on foreign sources for PRC advanced armaments. Based on the sheer size of the PLAAF and the PLAN, replacement of the obsolete platforms with exclusively foreign-purchased weapons would provide the capabilities desired by Beijing to prevent U.S. Navy CVBG interference in the Taiwan situation, but the cost and foreign dependence implications are prohibitive.

2. The Indigenous Production Approach

A modernization program emphasizing strictly indigenous development and production of all PLA armaments would require military R&D facilities to provide cutting-edge technology for development and production of a high-technology force capable of supporting the PRC's military strategy of local war around China's periphery, including reacting to a hostile U.S. Navy CVBG. This approach is attractive because it avoids foreign dependence, and results in a military-industrial infrastructure capable of producing modern high-technology arms. However, the reality of this option is that it does not serve the current needs of the PLA. Present PRC indigenous arms R&D and production capabilities are inadequate for the task of timely PLAAF or PLAN high-technology weapon modernization, and the cost in terms of capital and time required to bring the infrastructure up to advanced standards might also prove prohibitive. Considering the fact that the primary threat to the PRC — the U.S. Navy — is already more advanced in weapons technology from both an R&D and current production standpoint, this option is not appropriate in light of Beijing's

current threat perception.

3. "Enhanced" Self-Sufficiency

A modernization program which emphasizes the current capabilities of the PLA defense industries with the value added from procuring available advanced components could produce lower technology "enhanced" platforms. PLA defense industries can already produce a fairly large number of lower technology weapons. With application of the advanced industrial techniques being acquired through the assistance from nations like Israel and Russia, exemplified in the case of the SAC Su-27 production facility, this option is available to Beijing. A modernization plan of this type would produce large numbers of medium capability weapons to overwhelm the advanced capabilities of the superior military technology associated with U.S. Navy CVBGs. This approach would integrate R&D advances made by the PLA defense industries, but emphasis would be placed on high production rates for current generation or slightly modified PLAN and PLAAF platforms. This option would deliver a number of weapons in a timely manner to complement the small number of advanced foreign platforms in the order of battle while avoiding total dependence on foreign sources. The great disadvantage to this approach is that the overall technological obsolescence of PRC-produced arms is not rectified. Technological modernization will come at the pace of indigenous R&D advancement with the inclusion of what foreign technology and techniques may be available.

4. Mix To Fit

The final plan to be considered is essentially a combination of the best aspects of the

first two options. It emphasizes continued procurement of the current generation Russian naval and air platforms to include possible additional purchases of KILOs and SOVREMENNYs. At the same time, maximum effort would be put into infrastructure modernization through technology acquisition or transfer. Indigenous platforms under development would be accelerated to raise indigenous R&D skills. This approach solves both the timeliness and capabilities requirements for the PLA. Advanced platforms are available to prevent the incursion of U.S. Navy CVBGs into the Taiwan Strait while at the same time the capabilities of the indigenous military-industrial complex improve at an increased pace. The significant hazard inherent to this option is its complexity as it requires nearly simultaneous improvement in all levels of the military R&D, design and production cycle.

5. In The End

Based on the PLA's perception of the U.S. Navy as the greatest threat in the Taiwan issue, as long as the United States maintains a presence in the Pacific, Beijing will attempt to possess a conventional deterrence response to CVBGs should America engage in additional "gunboat diplomacy" as it did in March 1996. Present PLA equipment modernization utilizes foreign arms procurement and technology transfer to aid indigenous capabilities. In the future the PRC will strive to procure a much smaller portion of its armaments from abroad, while relying on its own military-industrial infrastructure for provision of most of its required high-technology weapons. To increase the PLA's capabilities in the future, the PRC will continue pursuing an equipment modernization

program which includes foreign procurement for immediate, short-term capability and utilization of associated technology transfer to improve the indigenous military-industrial infrastructure while moving toward the long-term goal of armament self-sufficiency.

ENDNOTES

1. Gao Heng, "Future Military Trends," in *Chinese Views of Future Warfare*, ed. Michael Pillsbury (Washington: National Defense University Press, 1997), 94.
2. David Shambaugh, "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection," *The China Quarterly* 146 (June 1996): 286.
3. Kenneth Lieberthal, *Governing China, From Revolution Through Reform* (New York: W.W.Norton & Company, Inc., 1995), 111.
4. Elizabeth Kier, *Imagining War: French and British Military Doctrine Between the Wars* (Princeton, NJ: Princeton University Press, 1997), 27.
5. Bates Gill and Taeho Kim, *China's Arms Acquisitions from Abroad: A Quest for 'Superb and Secret Weapons'*, SIPRI Research Report No. 11 (NY: Oxford University Press, 1995), 2.
6. Shambaugh, "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection," 286.
7. Quoted in Nigel Holloway, "China and Grabbing the Potential of the RMA," *The Far Eastern Economic Review* 160, no. 30 (24 July 1997): 23 pars. Online. Available [HTTP://www.feer.com](http://www.feer.com). 27 July 1997.
8. Bates Gill, "Russia, Israel Help Force Modernization," *Jane's Defence Weekly*, 31 January 1996, 54. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 3 November 1997.
9. Paul H. B. Godwin, "Uncertainty, Insecurity, and China's Military Power," *Current History* (September 1997): 256.
10. See the discussion of the future PRC naval strategy in Chen Yung-kang and Chai Wen-chung, "China: PRC Naval Expansion Viewed," *Taipei Chung-Kuo Ta-Lu Yen-Chiu*. 1 September 1997, in FBIS-CHI-97-329, 25 November 1997.
11. John Downing, "China's Evolving Maritime Strategy; Part 1: Restructuring Begins," *Jane's Intelligence Review*, 1 March 1996, 129. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 3 November 1997.
12. "China Denies Expansionist Plans on Army's 70th Birthday," *Agence France Presse*, 31 July 1997. Online. LEXIS-NEXIS. Library: asiapc. File: curnws. 11 November 1997.

13. Samuel S. Kim, "China as a Great Power," *Current History* (September 1997): 248.
14. Ibid.
15. Chong-Pin Lin, "China on the move: revamping China's military," *Current* (June 1994). Online. LEXIS-NEXIS. Library: news. File: asapII. 17 January 1998.
16. William J. Dobson and M. Taylor Fravel, "Red Herring Hegemon: China in the South China Sea," *Current History* (September 1997): 260.
17. Ibid., 261.
18. Ibid., 262.
19. Pravin Sawhney, "Changing tides in India's oceans," *Jane's Navy International*, 1 November 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 1 February 1998.
20. Michael William Studeman, "Dragon in the Shadows: Calculating China's Advances in the South China Sea" (MA Thesis, Naval Postgraduate School, 1996).
21. Godwin, "Uncertainty, Insecurity, and China's Military Power," 252.
22. Kim, "China as a Great Power," 249.
23. Ibid., 248.
24. Godwin, "Uncertainty, Insecurity, and China's Military Power," 255.
25. Dobson and Fravel, "Red Herring Hegemon: China in the South China Sea," 260.
26. Effie R. Petrie, "Capability and Intention: An Analysis of the Modernization of the PLA" (MA Thesis, Naval Postgraduate School, 1996), 26-27.
27. Dobson and Fravel, "Red Herring Hegemon: China in the South China Sea," 259.
28. Joseph C. Anselmo, "China's Military Seeks Great Leap Forward," *Aviation Week & Space Technology*, 12 May 1997, 68.
29. "Country Briefing: China; Chasing the 20th century," *Jane's Defence Weekly*, 19 February 1994, 26.
30. Chi Haotian quoted in "China: Article on National Security Strategy, U.S. Taiwan Policy," *Hong Kong Ta Kung Pao*, 3 September 1997, in FBIS-CHI-97-246, 4 September 1997.

31. Allen S. Whiting, "The PLA and China's Threat Perceptions," *The China Quarterly* 146 (June 1996): 606.
32. Yossef Bodansky, "The PRC Formulates a New Military Strategy For Taiwan," *Defense & Foreign Affairs Strategic Policy* (September 1997): 7.
33. "China: Article on National Security Strategy, U.S. Taiwan Policy," *Hong Kong Ta Kung Pao*, 3 September 97, in FBIS-CHI-97-246, 4 September 1997.
34. Bodansky, "The PRC Formulates a New Military Strategy For Taiwan," 7.
35. "Jiang Zemin Congress Report," *Beijing Xinhua*, 21 September 1997, in FBIS-CHI-97-266, 23 September 1997.
36. Kenneth W. Allen, Glenn Krumel and Jonathan Pollack, *China's Air Force Enters The 21st Century*, MR-580-AF. (Santa Monica, Calif.: RAND, 1995), 23.
37. Mao, quoted in Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 24.
38. Paul Godwin and John J. Schulz, "Arming the Dragon for the 21st Century: China's Defense Modernization Program," *Arms Control Today* (December 1993): 3.
39. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 26.
40. Godwin and Schulz, "Arming the Dragon for the 21st Century: China's Defense Modernization Program," 4.
41. Weixing Hu, "China's Security Agenda after the Cold War," *The Pacific Review* 8, no. 1 (1995): 125.
42. "Country Briefing: China; Chasing the 20th century," *Jane's Defence Weekly*, 19 February 1994, 26.
43. Discussed in Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 29.
44. Godwin, "Uncertainty, Insecurity, and China's Military Power," 254.
45. Wang Naiming, "Adhere to Active Defense and Modern People's War," in *Chinese Views of Future Warfare*, ed. Michael Pillsbury (Washington: National Defense University Press, 1997), 37.
46. Downing, "China's Evolving Maritime Strategy; Part 1: Restructuring Begins."

47. Godwin, "Uncertainty, Insecurity, and China's Military Power," 254.
48. Hu, "China's Security Agenda after the Cold War," 122.
49. Godwin, "Uncertainty, Insecurity, and China's Military Power," 254.
50. Chong-Pin Lin, "Chinese Military Modernization: Perceptions, Progress, and Prospects," *Security Studies* 3, no. 4 (Summer 1994): 732.
51. Lin, "Chinese Military Modernization: Perceptions, Progress, and Prospects," 733.
52. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 31-32.
53. Downing, "China's Evolving Maritime Strategy; Part 1: Restructuring Begins."
54. Summarized in Godwin, "Uncertainty, Insecurity, and China's Military Power," 254.
55. CNDU report quoted in Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 33.
56. Richard Bernstein and Ross Munro, "China I: The Coming Conflict with America," *Foreign Affairs* 76, no.2 (March/April 1997): 25. Online. LEXIS-NEXIS. Library: busfin. File: abi. 12 November 1997.
57. Bodansky, "The PRC Formulates a New Military Strategy For Taiwan," 15.
58. Ibid.
59. Ibid., 17.
60. Gill and Kim, *China's Arms Acquisitions from Abroad*, 11.
61. Wendy Frieman, "China's Defence Industries," *Strategic Digest* (June 1993):860-861.
62. Richard A. Bitzinger, "Arms to Go; Chinese Arms Sales to the Third World," *International Security* 17, no. 2 (Fall 1992): 95.
63. Gill and Kim, *China's Arms Acquisitions from Abroad*, 17.
64. Ibid., 21.
65. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 144.
66. Gill and Kim, *China's Arms Acquisitions from Abroad*, 31.

67. Ibid., 46-47.
68. Ibid., 55.
69. Paul Beaver, "China Acquires More Arms Technology," *Jane's Intelligence Review - Pointer*, 1 November 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 10 December 1997.
70. Summarized in "China: PLA Support for Jiang Analyzed," *Hong Kong Kuang Chiao Ching*, 16 September 1997, in FBIS-CHI-97-288, 16 September 1997.
71. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*.
72. Richard D. Fischer, "China's Purchase of Russian Fighters: A Challenge to the U.S.," *Asian Studies Center Backgrounder* No. 142, 31 July 1996. Online. LEXIS-NEXIS. Library: miltry. File: nsr. 27 August 1997.
73. Office of Naval Intelligence, *Worldwide Challenges to Naval Strike Warfare, 1997* (Washington, D.C.: GPO, 1997), 16.
74. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*.
75. Shambaugh, "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection," 289.
76. Admiral Zhang Lianzhong, quoted in Guan Jingfu, "Commander of the PRC Navy Discloses Latest Movements of the PRC Navy," *Guang Jia Jing*, 16 November 1991, in Joint Publications Research Service, *China Report*, JPRS-CAR-92-013, 9 March 1992, 22.
77. Shambaugh, "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection," 293.
78. Quoted in Fischer, "China's Purchase of Russian Fighters: A Challenge to the U.S."
79. Allen, Krumel and Pollack, *China's Air Force Enters The 21st Century*, 156.
80. Fischer, "China's Purchase of Russian Fighters: A Challenge to the U.S."
81. Ibid.
82. Bates Gill and James Lamson, "Chinese Weapons of Mass Destruction: Conceptions, Capabilities, Policies, Use," Unpublished Paper, August 1997, 12.

83. "China Prepares for Local Production of Sukhois," *Jane's Defence Weekly*, 16 July 1997, 15.
84. "China Reportedly to Produce Su-27 Fighter Aircraft," *Sing Tao Jih Pao*, Hong Kong, 12 August 1997, A3.
85. Fischer, "China's Purchase of Russian Fighters: A Challenge to the U.S."
86. Ibid.
87. Quoted in Graham Hutchings, "China Buys Advanced Aircraft to go on the Offensive," *The Daily Telegraph*, 16 April 1997, 16.
88. Bodansky, "The PRC Formulates a New Military Strategy For Taiwan," 17.
89. Office of Naval Intelligence, *Worldwide Submarine Challenges, 1997 edition* (Washington, D.C.: GPO, 1997), 20.
90. [Eric McVadon], "People's Republic of China," in *Asia-Pacific: Issues & Developments, November 1997*, comp. Jacquelyn K. Davis and Charles M. Perry, 29-58 (Washington, DC: Institute for Foreign Policy Analysis, 1997), 46.
91. "China Buys Russian Destroyers," *Navy News & Undersea Technology*, 13 January 1997. Online. LEXIS-NEXIS. Library: miltry. File: navynw. 11 November 1997.
92. Steven J. Zaloga, "Sovremenny: The Instrument of Eastern Power Projection," *Jane's Intelligence Review*, 1 December 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 10 December 1997.
93. [Eric McVadon], "People's Republic of China," in *Asia-Pacific: Issues & Developments, November 1997*, 44.
94. Zaloga, "Sovremenny: The Instrument of Eastern Power Projection."
95. Stephen Blank, "Russia's Clearance Sale," *Jane's Intelligence Review*, 1 November 1997, 517.
96. National Security Planning Associates, *Asia-Pacific: Issues & Developments, November 1997*, 45.
97. "Russian Imports Step in to Fill the Arms Gap," *Jane's Defence Weekly*, 10 December 1997, 27.
98. Ibid.

BIBLIOGRAPHY

- "A Review of China's Military Modernization Since 1977." *China News Analysis*, 1 June 1994, 1-9.
- "Beijing Plans To Buy New Lot of Russian Su-27 Fighters." *Itar-Tass*. 10 November 1996. Online. Available HTTP. <http://www.nlsearch.com/cgi-bin/pdserv.pl?cbrecid=VV19970808130000581&ho=typhoon&po=5004&pc=-1#start>. 5 September 1997.
- "Beijing Reportedly Purchases Another 24 Su-27 Fighters from Russia." *BBC Summary of World Broadcasts*. 26 October 1995. Online. LEXIS-NEXIS. Library: ASIAPC. File: news. 27 August 1997.
- "Chasing the 20th century." *Jane's Defence Weekly*, 19 February 1994, 26-27.
- "China and Russia Cooperating in Manufacture of Su-27 Fighters." *Kuang Chiao Ching*, 16 January 1996, 79.
- "China and Russia Cooperating in Manufacture of Su-27 Fighters." *BBC Summary of World Broadcasts*. 13 March 1996. Online. LEXIS-NEXIS. Library: ASIAPC. File: news. 27 August 1997.
- "China: Article on National Security Strategy, U.S. Taiwan Policy." *Hong Kong Ta Kung Pao*. 3 September 1997, in FBIS-CHI-97-246, 4 September 1997.
- "China Bases Russian-Made Fighters In Southern Provinces." *Itar-Tass*. 10 November 1996. Online. Available HTTP. <http://www.nlsearch.com/cgi-bin/pdserv.pl?cbrecid=VV19970808130000425&ho=typhoon&po=5004&pc=-1#start>. 5 September 1997.
- "China buys Russian Destroyers." *Navy News & Undersea Technology*. 13 January 1997. Online. LEXIS-NEXIS. Library: miltry. File: navynw. 11 November 1997.
- "China denies expansionist plans on army's 70th birthday." *Agence France Presse*. 31 July 1997. Online. LEXIS-NEXIS. Library: asiapc. File: curnws. 11 November 1997.
- "China: PLA Support for Jiang Analyzed." *Hong Kong Kuang Chiao Ching*. 16 September 1997, in FBIS-CHI-97-288, 16 September 1997.

- "China Prepares for Local Production of Sukhois." *Jane's Defence Weekly*. 16 July 1997, 15.
- "China Reportedly to Produce Su-27 Fighter Aircraft." *Sing Tao Jih Pao*, Hong Kong. 12 August 1997, A3.
- "Country Briefing China: Major modernization sees slimmer giant." *Jane's Defence Weekly*. 10 December 1997, 24-26.
- "Jiang Zemin Congress Report." *Beijing Xinhua*. 21 September 1997, in FBIS-CHI-97-266, 23 September 1997.
- "Moscow Expects to Increase Military Cooperation with China." *Moscow Interfax*, 27 June 1997. Translated by Foreign Broadcast Information Service, LD2706184797 Online. FBIS. Central Eurasia, China. 20 August 1997.
- "Post-2000 delays to China's arms goals." *Jane's Defence Weekly*. 21 January 1998. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 1 February 1998.
- "Russian imports step in to fill the arms gap." *Jane's Defence Weekly*. 10 December 1997, 27-28.
- Ahrari, Ehsan. "China's 'Not-So-Great' Leap Forward." *Jane's Intelligence Review*. 1 January 1998. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 1 February 1998.
- Allen, Kenneth W., Glenn Krumel, and Jonathan Pollack. *China's Air Force Enters The 21st Century*, MR-580-AF. Santa Monica, Calif.: RAND, 1995.
- Anselmo, Joseph C. "China's Military Seeks Great Leap Forward." *Aviation Week & Space Technology*, 12 May 1997, 68-72.
- Paul Beaver, Paul. "China Acquires More Arms Technology." *Jane's Intelligence Review - Pointer*. 1 November 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 10 December 1997.
- Bernstein, Richard and Ross Munro. "China I: The Coming Conflict with America." *Foreign Affairs* 76, no.2. March/April 1997, 25. Online. LEXIS-NEXIS. Library: busfin. File: abi. 12 November 1997.
- Bitzinger, Richard A. "Arms to Go, Chinese Arms Sales to the Third World." *International Security* 17, no. 2 (Fall 1992): 85-111.

- Blank, Stephen. "Russia's Clearance Sale." *Jane's Intelligence Review*. 1 November 1997, 517-522.
- Bodansky, Yossef. "The PRC Formulates a New Military Strategy For Taiwan." *Defense & Foreign Affairs Strategic Policy*. September 1997, 7-11.
- Dobson, William J. and M. Taylor Fravel. "Red Herring Hegemon: China in the South China Sea." *Current History*. September 1997, 258-263.
- Downing, John. "China's Evolving Maritime Strategy; Part 1: Restructuring Begins." *Jane's Intelligence Review*. 1 March 1996, 129. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 3 November 1997.
- Fischer, Richard D. "China's Purchase of Russian Fighters: A Challenge to the U.S." *Asian Studies Center Backgrounder* No. 142. 31 July 1996. Online. LEXIS-NEXIS. Library: miltry. File: nsr. 27 August 1997.
- Flamm, Don. "Impact of China's Military Modernisation in the Pacific Region." *Asian Defence Journal*. January 1997, 16-21.
- Frieman, Wendy. 1993. "China's Defence Industries." *Strategic Digest* 23, no. 6 (June 1993): 856-68.
- Fulgum, David A. "China Pursuing Two-Fighter Plan." *Aviation Week & Space Technology*, 13 March 1995, 44-45.
- Gill, Bates. "Russia, Israel Help Force Modernization." *Jane's Defence Weekly*. 31 January 1996, 54. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 3 November 1997.
- Gill, Bates and Taeho Kim. *China's Arms Acquisitions from Abroad: A Quest for 'Superb and Secret Weapons'.* SIPRI Research Report No. 11. New York: Oxford University Press, 1995.
- Gill, Bates, and James Lamson. "Chinese Weapons of Mass Destruction: Conceptions, Capabilities, Policies, Use." Unpublished paper, August 1997.
- Godwin, Paul H. B. "Force Protection and China's National Military Strategy." In *Chinese Military Modernization*, ed. C. Dennison Lane, Mark Weisenbloom, and Dimon Liu, 69-99. Washington, D.C.: AEI Press, 1996.

- Godwin, Paul H. B. "Technology, Strategy, and Operations: The PLA's Continuing Dilemma." Unpublished paper prepared for SIPRI Workshop 'Military Technology and Offensive Capability in Southern Asia,' 22-24 September 1995.
- Godwin, Paul H. B. "Uncertainty, Insecurity, and China's Military Power." *Current History*. September 1997, 252-257.
- Godwin, Paul and John J. Schulz. "Arming the Dragon for the 21st Century: China's Defense Modernization Program." *Arms Control Today*. December 1993, 3-8.
- Holloway, Nigel. "China and Grabbing the Potential of the RMA." *The Far Eastern Economic Review* 160, no. 30. 24 July 1997. 23 paras. Online. Available [HTTP://www.feer.com](http://www.feer.com). 27 July 1997.
- Hu, Weixing. "China's Security Agenda after the Cold War." *The Pacific Review* 8, no. 1. 1995, 117-135.
- Hua, Di. "Enhancing Military Prestige to Alleviate Internal Threat to Domestic Regime: A New Approach for Understanding China's Military Technology Development." Unpublished paper prepared for SIPRI Workshop 'Military Technology in South Asia', 22-24 September 1995.
- Hutchings, Graham. "China Buys Advanced Aircraft to go on the Offensive." *The Daily Telegraph*, 16 April 1997, 16.
- Ji, You. 1995. "High-Tech Shift for China's Military." *Asian Defence Journal*, September 1995, 4-10.
- Jingfu, Guan. "Commander of the PRC Navy Discloses Latest Movements of the PRC Navy." *Guang Jia Jing*. 16 November 1991, in Joint Publications Research Service, *China report*, JPRS-CAR-92-013, 9 March 1992, p.22.
- Johnson, Bret D. "China's Aerospace Industry: Technology, Funding and Modernization." Unpublished Paper, University of Hawaii, April 1992.
- Kier, Elizabeth. *Imagining War: French and British Military Doctrine Between the Wars*. Princeton, NJ: Princeton University Press, 1997.
- Kim, Samuel S. "China as a Great Power." *Current History*. September 1997, 246-251.
- Lane, C. Dennison, Mark Weisenbloom, and Dimon Liu. *Chinese Military Modernization*. Washington D.C.: AEI Press, 1996.

- Lieberthal, Kenneth. *Governing China, From Revolution Through Reform*. New York: W.W.Norton & Company, Inc., 1995.
- Lin, Chong-Pin. "Chinese Military Modernization: Perceptions, Progress, and Prospects." *Security Studies* 3, no. 4. Summer 1994, 718-751.
- Lin, Chong-Pin. "China on the Move: Revamping China's Military." *Current*. June 1994. Online. LEXIS-NEXIS. Library: news. File: asapII. 17 January 1998.
- Lijiang, Shen. "China: PLA Navy Air Force's Total Aircraft Rank Third in World." *Beijing Hangkong Zhishi* no. 8. August 1997. In FBIS-CHI-98-028. 28 January 1998.
- [McVadon, Eric]. "People's Republic of China." In *Asia-Pacific: Issues & Developments, November 1997*. Comp. Jacquelyn K. Davis and Charles M. Perry, 29-58. Washington, DC: Institute for Foreign Policy Analysis, 1997.
- Mulvenon, James. *Chinese Military Commerce and U.S. National Security*, DRU-1626-CAPP. Santa Monica, RAND Center for Asia-Pacific Working Paper. Calif.: RAND, 1997.
- Nikitin, Yevgeniy, and Mikhail Shevtsov. "Russia: China Second Largest Russian Aircraft Buyer." *ITAR-TASS* (Moscow), 20 August 1997. Translated by Foreign Broadcast Information Service, LD2008134897, 20 August 1997.
- Office of Naval Intelligence. *Worldwide Challenges to Naval Strike Warfare, 1997*. Washington, D.C.: GPO, 1997.
- Office of Naval Intelligence. *Worldwide Submarine Challenges, 1997 edition*. Washington, D.C.: GPO, 1997.
- Petrie, Effie R. "Capability and Intention: An Analysis of the Modernization of the PLA." MA Thesis, Naval Postgraduate School, 1996.
- Pillsbury, Michael. *Chinese Views of Future Warfare*. Washington, D.C.: National Defense University Press, 1997.
- Richardson, Michael. "China-Russia Deal Could Fuel An Asian Arms Race." *International Herald Tribune*. 8 February 1996. Online. LEXIS-NEXIS. Library: ASIAPC. File: news. 27 August 1997.

- Sawhney, Pravin. "Changing Tides in India's Oceans." *Jane's Navy International*. 1 November 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 1 February 1998.
- Sengupta, Prasun. "Asia-Pacific Balance of Military Power." *Defence Journal XVIII* (1993): 47-51.
- Shambaugh, David. "China's Military in Transition: Politics, Professionalism, Procurement and Power Projection." *The China Quarterly* 146. June 1996, 265-298.
- Shambaugh, David. "The United States and China: Cooperation or Confrontation?" *Current History*. September 1997, 241-245.
- Studeman, Michael William. "Dragon in the Shadows: Calculating China's Advances in the South China Sea." MA Thesis, Naval Postgraduate School, 1996.
- Tyler, Patrick E. "China Seals Accord for 72 Fighters from Russia; Moscow Also Sells License to Produce Supersonic Jets." *International Herald Tribune*. 7 February 1996. Online. LEXIS-NEXIS. Library: ASIAPC. File: news. 27 August 1997.
- Whiting, Allen S. "The PLA and China's Threat Perceptions." *The China Quarterly* 146. June 1996, 596-615.
- Yung-kang, Chen and Chai Wen-chung. "China: PRC Naval Expansion Viewed." *Taipei Chung-Kuo Ta-Lu Yen-Chiu*. 1 September 1997, in FBIS-CHI-97-329, 25 November 1997.
- Yurkin, Anatoliy. "Arms Control & Proliferation Issues." LD1411125896 Moscow ITAR TASS (14 November 1996). Translated by Foreign Broadcast Information Service.
- Zaloga, Stephen J. "Sovremenny: The Instrument of Eastern Power Projection." *Jane's Intelligence Review*. 1 December 1997. Online. LEXIS-NEXIS. Library: miltry. File: jandef. 10 December 1997.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center. 2
8725 John J. Kingman Rd., Ste 0944
Ft. Belvior, VA 22060-6218
2. Dudley Knox Library 2
Naval Postgraduate School
411 Dyer Rd.
Monterey, CA 93943-5101
3. Dr. Mary Callahan, NS /Cm 1
Naval Postgraduate School
1411 Cunningham Rd.
Monterey, CA 93943-5218
4. Dr. James Wirtz, NS/Wz. 1
Naval Postgraduate School
1411 Cunningham Rd.
Monterey, CA 93943-5218
5. Dr. Claude Buss 1
1234 Pitman Ave.
Palo Alto, CA 94301
6. Dr. Douglas Porch, NS/Pd 1
Naval Postgraduate School
1411 Cunningham Rd.
Monterey, CA 93943-5218
7. Chairman, National Security Affairs Department. 1
Naval Postgraduate School
1411 Cunningham Rd.
Monterey, CA 93943-5218
8. Director of Naval Intelligence (N2) 1
Pentagon, Room 5C600
Washington, DC 20350

9. Commander-In-Chief 1
USCINCPAC
Attn: J2
Box 64010
Camp H. M. Smith, HI 96861-4010
10. Commander-In-Chief 1
U.S. Pacific Fleet
Attn: N2
250 Makalapa Dr.
Pearl Harbor, HI 96860-7000
11. Commander Joint Intelligence Center Pacific 1
Box 500
Pearl Harbor, HI 96860-7450
12. CAPT Don Loren 1
Office of the CNO
Deputy Director, Strategy and Policy (N51B)
2000 Navy Pentagon, Room 4E566
Washington, DC 20350-2000
13. MAJ Mark A. Stokes 1
OSD International Security Affairs
Asia and Pacific Affairs
The Pentagon, Room 4C769
Washington, DC 20301-0400
14. RAA-2. 1
China Division
Defense Intelligence Agency
Bolling AFB
Washington, DC 20340
15. ONI-22 1
Office of Naval Intelligence
4251 Suitland Rd.
Washington, DC 20395-5270
16. ONI-223 1
Office of Naval Intelligence
4251 Suitland Rd.
Washington, DC 20395-5270

17. ONI-33 1
Office of Naval Intelligence
4251 Suitland Rd.
Washington, DC 20395-5270
18. Central Intelligence Agency 1
Office of Asian Pacific and Latin American Analysis (APLA)
Washington, DC 20505
19. RADM Eric A. McVadon, USN (RET) 1
9902 Minburn St.
Great Falls, VA 22066
20. Librarian 1
Asia-Pacific Center for Security Studies
2255 Kuhio Avenue, Suite 1900
Honolulu, HI 96815
21. LCDR Andrew L. Caldera 4
240 Ardennes Circle
Seaside, CA 93955
22. CAPT Frank B. Kelly 1
Naval Postgraduate School
1411 Cunningham Rd.
Monterey, CA 93943-5218
23. Mr. Donald Caldera 1
P.O. Box 748
Lake Placid, NY 12946-0748
24. VADM George D. Steele, USN (RET). 1
6 Upland Rd., Apt. B2
Baltimore, MD 21210
25. Mr. Joseph Henderson Jr. 1
579 FM 2992
Woodville, TX 75979